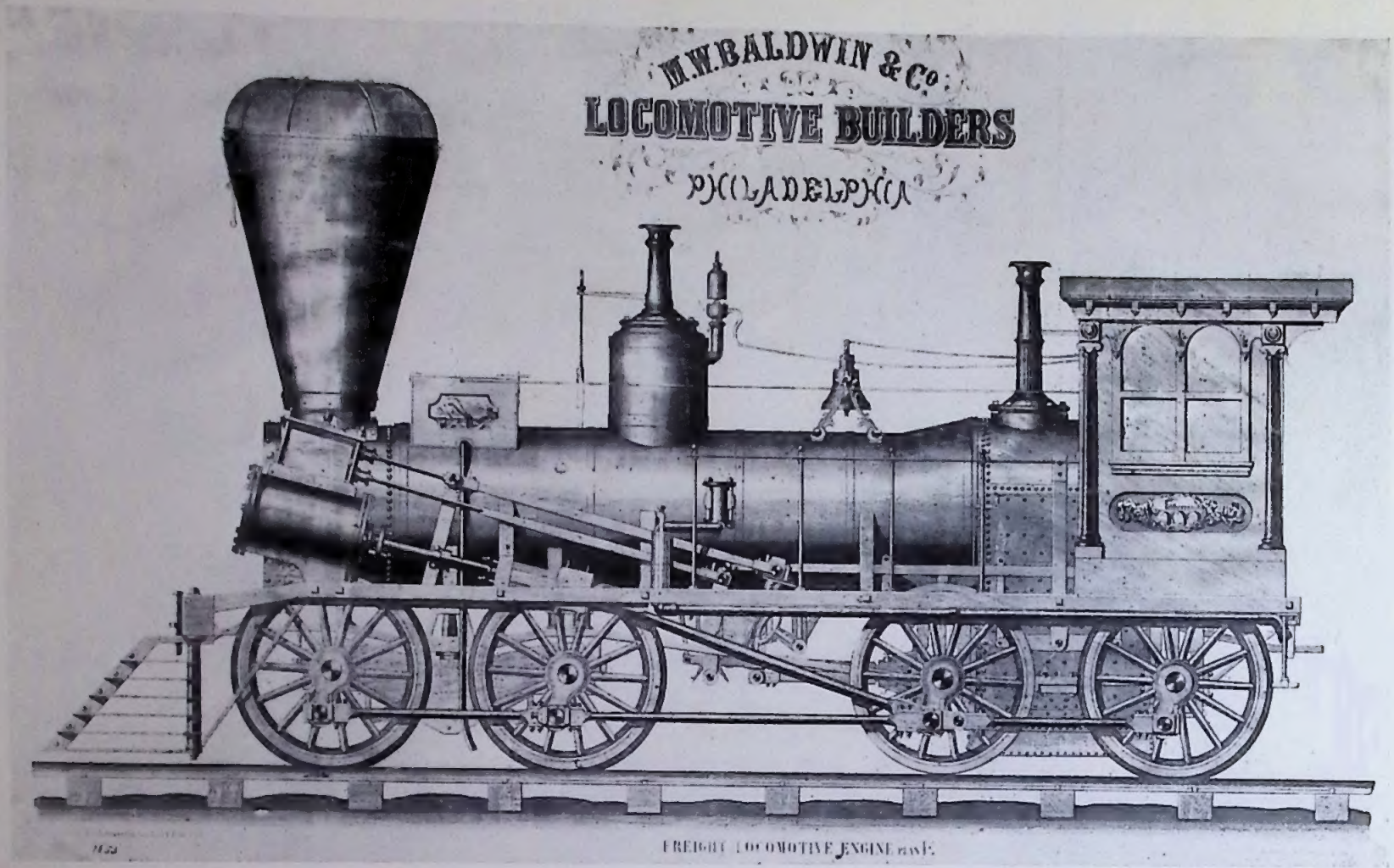
Trains

25¢

for OCTOBER

See page 6.



Courtesy Atlantic Coast Line.

Baldwin-built freight locomotive of about 1850.

By 1850 M. W. Baldwin of Philadelphia had assumed prominence as one of the country's leading locomotive builders. The engineering design of railroad engines had not then settled into set practice, and competitive innovations were frequent. One was the Baldwin flexible beam truck, an arrangement of rods and axle boxes to allow driving wheels to move laterally. This freight engine, probably built for the Wilmington & Weldon, a forerunner of the Atlantic Coast Line, was so fitted. By 1850 some present-day locomotive characteristics had developed. The reproduction is of an old Baldwin advertising lithograph, drawn by Robert Brown.

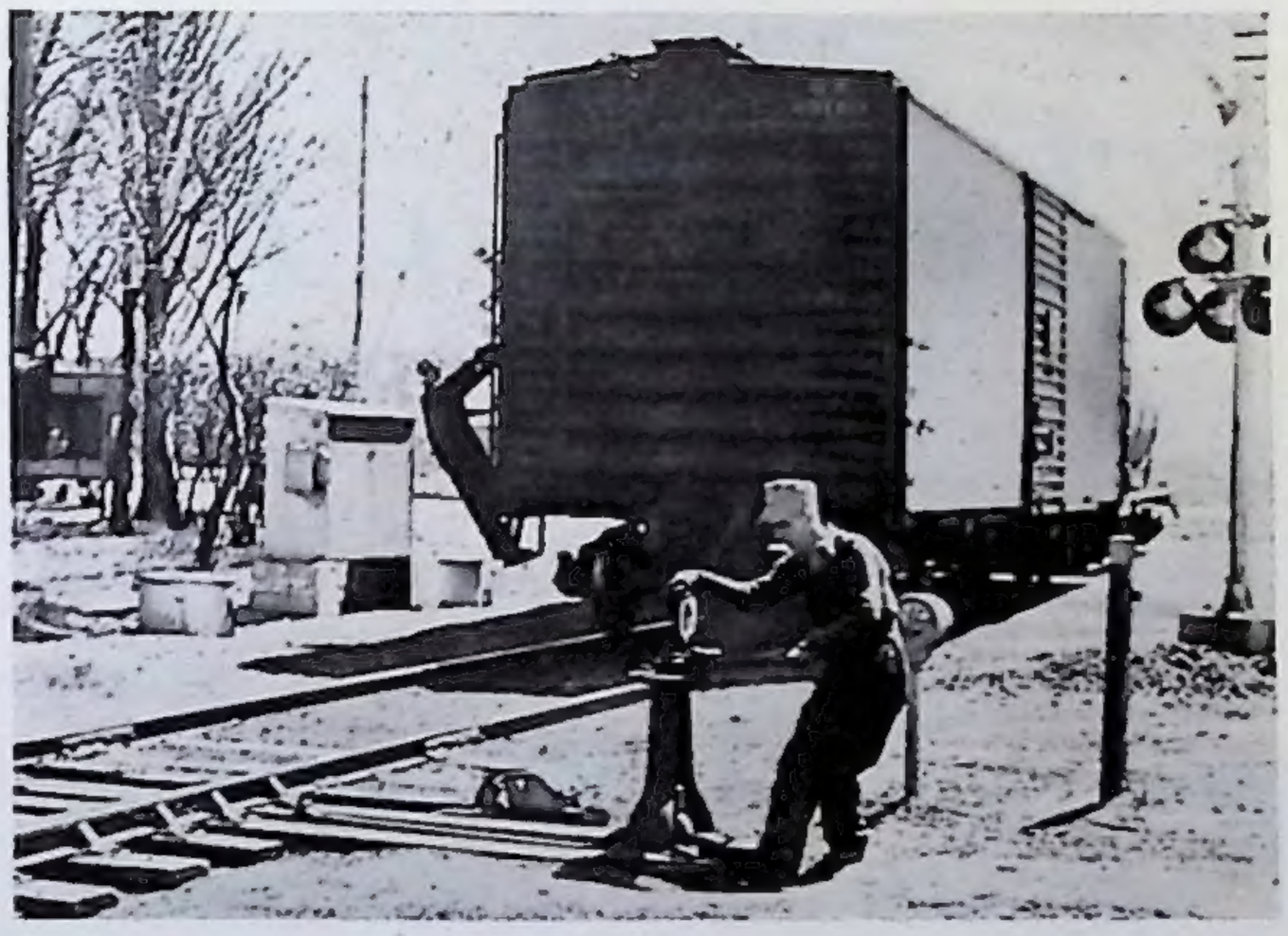
Waybills

The division superintendent asked how we got along with our article on his piece of railroad ["The Way Freight," page 4]. "Swell! Our photographer especially liked Conductor Bailey. Thought he was very photogenic and took pictures of him all over the place." The super swallowed hard at *photogenic*, but recovered with "Yes, and he's a damned good conductor, too!"

In Moulton's book, *St. Lawrence Navigation and Power Project*, it is stated that an all-freight double-track railroad between Chicago and Boston would have 10 times as great potential freight carrying capacity as the proposed Great Lakes-St. Lawrence Seaway; yet it is unlikely that anyone would suggest that the country now needs such an additional railroad. The same authority states that a double-track railway could be constructed at one-third the cost of the seaway. Disregarding the difference in costs, construction of the seaway at this time would still clearly involve spending a tremendous sum of public money on a project that would result in adding to the country's already great surplus transportation capacity.

Ticket collecting on some of the big transcontinental trains is quite a formality, rating as practically the event of the trip. A small army comes marching down the aisle—train conductor, train auditor, Pullman conductor, and nowadays a stewardess-nurse as well to take notes on babies that need feeding, children traveling alone, and so on.

A. C. K.



Trains

Editors: A. C. Kalmbach, Linn H. Westcott, Willard V. Anderson

Vol. 1 October, 1941 No. 12

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The Way Freight

By A. C. Kalmbach.

THE heavy rails beyond the platform edge begin to vibrate with that strange anticipatory hum that precedes a fast train down the track. Now a long-drawn grade-crossing whistle floats through the cloudless sky. This isn't what I'm waiting for. It's coming too fast! The crossing warning begins to tinkle. She whizzels past! No. 20 is through Morton Grove; a gray mail bag plummets onto the station lawn as a dark steel finger snatches a similar bag from the mail crane and whisks it along in that cavalcade of motion. The clatter of rails and the roar of exhaust dwindle in the distance, the acrid aroma of coal smoke dissolves, and silence descends once more on the small town, 15 miles northwest of Chicago on the Milwaukee Road main line.

This is a good show, but only a sideshow. The feature attraction is now but a blackish haze hanging limply over the right of way to the south. Station Agent Mark Corcoran unhurriedly loads packages on an express truck and pushes it down the southbound platform. The postmaster ambles across the driveway with his pouch of love and kisses, checks and bills. An auto or two crawls along the street across the tracks from the station and a crossing watchman basks in the sun outside his shanty on the right of way. The quiet is broken only by the pastoral sounds of birds and trees rustling in the breeze. Even the sounds made by two men unloading a car of fertilizer at Vegetable Growers' Supply Company are muffled by the car and its load of soft, odoriferous material.

Fifty or sixty businesses are clustered about this station; 2200 persons live in Morton Grove. But this warm morning I have the impression of a lazy country hilltop with clouds drifting by. Only the railroad tracks seem to presage action. Four strips of 132-pound steel are they, taut and straight to both horizons, cleanly ballasted, semaphores pointing invitingly upward, businesslike heavy switches trailing off to side tracks serving the unkempt back ends of warehouse buildings. Four or six times a day *Hiawathas* sail through at 100 miles an hour, brief bright flashes in the slow day. Thirty other through passenger trains make the rails hum, but the stopping suburban trains are the ones that merit more than a casual glance from Morton Grove. Freight power pounds the rails with drags and time freights, but with no more than a whistle toot of respects for the commercial life of the town. Here the big trains don't count; it is the little trains that are used and lived with.

The haze on the southern horizon has sprung into life. It becomes a white plume and moves nearer like a waterspout swirling over the ocean. The station agent is watching it too. The plume focuses into a black speck, grows into a locomotive, into a train of freight cars. Extra 1251 West squeals to a stop with the caboose right smack in front of the depot. The squat Consolidation sits beyond the next street, white flags limp in the heat, boiler simmering in the sun. Station Agent Corcoran is out with greetings and salutations. "Well, boys, what have you for me this morning?" Genial conductor Ed Bailey clambers down from the caboose with a fistful of waybills, smiles a broad hello at Corcoran and then turns to me with mischief in his eyes.

"Some nerve you have, coming back to see us after writing our flyer up as the 'slowest train.'* You remember Red Johnson, our rear brakeman." Red is unsealing the way car, that most intriguing 40 feet of cargo space, right ahead of the caboose, reserved for less than carload merchandise.

The door slides open and inside is a great big case labeled Wurlitzer Automatic Phonograph. It's a new juke box for a Morton Grove

* In a British magazine some years ago.

★ Up and down the division
the little local train
delivers the goods.

Illustrations by Linn H. Westcott.

Conductor Ed Bailey.

soda parlor, and it takes the combined brawn of the rear end crew and front brakeman Archie Davenport to slide it carefully out onto a platform truck. A new lawn roller comes along, as well as several boxes of calcimine powder. There's an informal exchange of waybills between conductor and station agent, and then Corcoran says, "One of those cars of fertilizer up at Vegetable Growers' is empty. Pick it up if you want to." There's an inbound car of fertilizer to leave at the same place, as well as a car of building tile for Robinson Clay Products and a car of coal for Morton Grove Material Company. Sometimes F. L. Huscher gets cement and other materials in by the carload, but, says Bailey, "Huscher hasn't been getting so much lately, a couple of cars a month or so." Standard Oil and Vaughan's Seed Store are other good customers of the railroad at this stop.

On the cover.

The way freight is truly the most intriguing of trains, mixing main line running, switching, and friendly meals in the caboose. The front cover shows Milwaukee Road Consolidation 1248 (working the same way freight run described in the accompanying article) about to start a flying switch move at Morton Grove.

The empty car at Vegetable Growers' Supply is picked up on the front end of the locomotive and kicked back onto the train by means of a quickly executed flying switch. The loaded car of fertilizer is moved from behind the locomotive to in front of it by the same type of maneuver and spotted for unloading. Bailey says, "We know pretty well where to place the cars. After all, we've been on this run for quite a time and we know what the customers want." As he says this he's standing next to the crossing gates while the engine shuttles back and forth, and I can't help notice how many people he greets by name. When the locomotive chances to park across the main street the motorists wave hello to Engineer John Wilkins instead of honking angrily in big city style, and Wilkins smiles back benignly from his throne-like position high up in the cab.

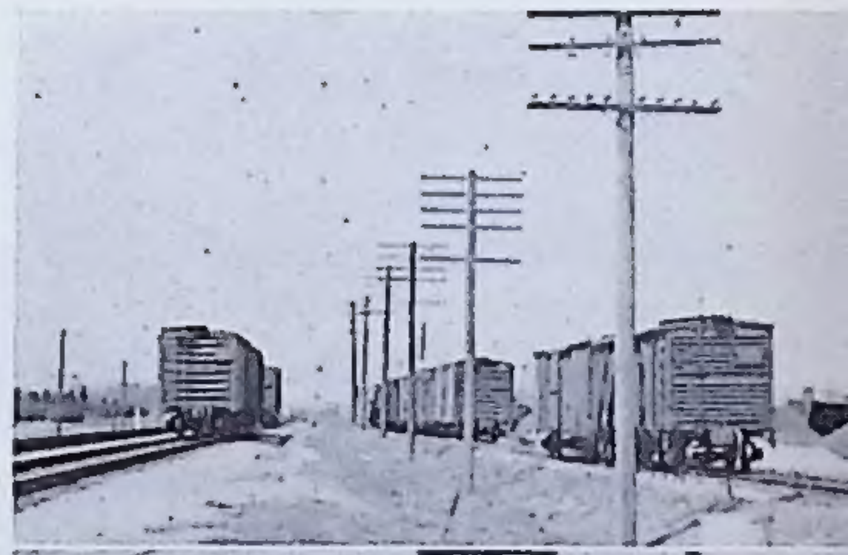
Truly the way freight is an integral part of Morton Grove's life, and of the railroad's life too. Slow train, yes. Workhorse of the railroad, yes. But the way freight is the distilled, flavorful essence of all that is railroading. It runs out on the high iron where named and numbered trains roll thick and fast, but it is not above visiting every lowly siding, the originating and delivery points of the traffic that foots the bills. It works hard all day: cuts off two cars of coal, picks up some empties, dodges into a siding to clear for No. 5, crosses over to the other main to move some cars for unloading in a material yard, makes a run for the next town before No. 23 is due. The conductor is up in the cab at one stop to lay things out with the engineer, swings up into the caboose as it rolls out of the next stop to do some figuring on the wheel report, and then he's into the operator's cranny at the station to get a lineup from the dispatcher. To those who ride the way freight all the machinations of main line operation are laid open like the pages of a picture book.

Let's swing aboard with good natured Conductor Bailey as Extra 1251 leaves Morton Grove. The railroad austerely calls this friendly little train the *Sturtevant Patrol,* and it left Galewood Yard in Chicago some two hours ago. Most of the intervening time was spent just over the hill to the south at Forest Glen, setting off a car of flour for the Northwest Flour & Feed Company and switching in the Hill-Behan Lumber Yard across the main line and a bit north of the station.

Life with the way freight.

The local freight train is essentially a small town character. Typical of the towns served by the Milwaukee Road train which is hero of this article is Glenview (top, right), population 2000, suburban home of Chicago workers and location of nurseries, seed stores, Baxter Laboratories, and the usual retail establishments. As the way freight pulls into a station it rates attention (right, center) and even the postmaster is likely to stay around to see what's in the way car. The little freight train itself (bottom) is not very imposing as it comes down the track. It's what it does and how it does it that add up in interest and importance. The sign post on Morton Grove station platform is not milepost 54 but a stopping point for engineers of five- or four-car suburban passenger trains.

Red Johnson, rear brakeman of the *Sturtevant Patrol*, thumbs waybills in the caboose during lunch time, laying out the afternoon's work.



Switching cars to and from private sidings is something like a game of checkers, with uncoupled cars standing around on siding and main line in what appears to be a mess.

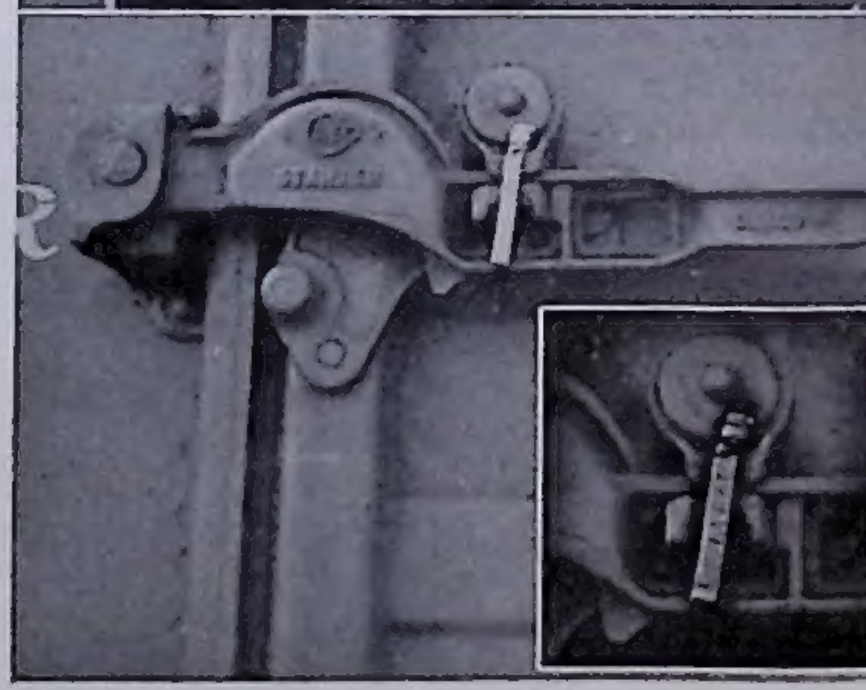
Lunch in the caboose is a friendly meal with a bantering, railroady conversation and Engineer John Wilkins pouring the coffee. Odd man in the group is a TRAINS editor.

Morton Grove, where the accompanying story of the way freight starts, is a typical small town, with its stores and warehouses backed against the railroad right of way.

John Wilkins well looks the part of a railroad engineer, or would he look as much like a banker or doctor or lawyer if dressed differently?

Station Agent Mark Corcoran opens the seal on the way car, carrier of a load of l. c. l. freight as varied as the stock of a small-town general store.

Duties of Conductor Ed Bailey include using the hand control on automatic crossing gates so that traffic is not tied up indefinitely while the train does local switching.

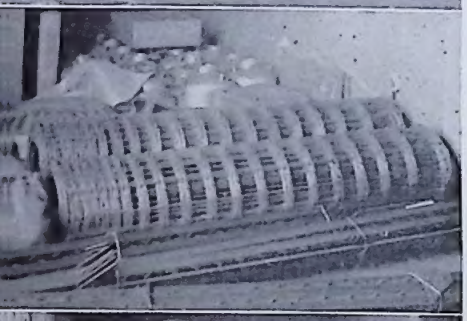


This is how a box car door is kept closed. The thin metal strip is a seal which acts as telltale if the door latch has been improperly opened.

Coupled up ahead of us are some 20 cars of miscellaneous freight and a couple of empties. The trainload with its cars of coal and oil and fertilizer and steel and lumber and building tile and stone is a pretty good cross section of what railroads are transporting in all parts of the country to keep our national economic machine in gear. The way car with the l. c. l. freight is even more varied. Conductor Bailey flips through some waybills. "One bicycle, from Montgomery Ward to Billy Tocco at Deerfield." Probably the boy's first bicycle. Won't his eyes shine when the train comes in! "One kitchen sink, three rolls wire fencing and steel fence posts, hardware for cow barn." This is as much fun as a mail order catalog.

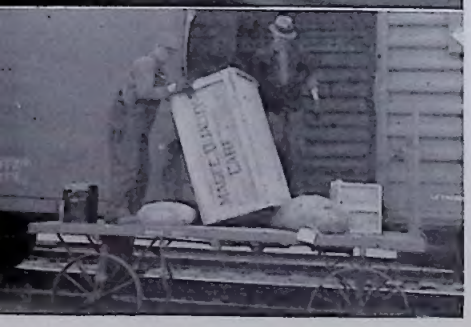
With all its varying local freight the *Sturtevant Patrol* cannot stick to any schedule, and indeed it hasn't any schedule to stay with. On this double-track, block-signaled division extra trains do not even have running orders. At Pacific Junction in Chicago Extra 1251 West received a clearance card, that little formality of railroad dispatching which assures

The way car may be the most interesting part of a local freight train, but loading and unloading it takes a lot of time.



The lading is all tightly fastened to floor or walls of the car so it won't shift while in transit, thus causing damage.

Sometimes the ingenuity of the crew is taxed, as by this huge reel of cable which must be transferred into a local truck.



Looks like express, but it's less than carload freight, once big revenue but now a problem child for the railroads.

that a train gets all the orders intended for it at the starting terminal. The only order was a copy of one issued to the second section of No. 20 reading, "Second No. 20 will run two hours late." All day long the way freight merely stays clear of the scheduled freight and passenger trains and in case another extra is on the line at the same time the dispatcher makes certain that a meeting point is arranged between the two extra trains. The job of the way freight conductor is not only to see that his freight is properly delivered and picked up but to see that his train is always in a siding when it's time for a scheduled train.

Ed Bailey is the archetype railroad conductor, well built, weather-bronzed, friendly. He knows his territory intimately, not only the railroad but the industries it serves. He knows what the Farmers' Cooperative means to Truesdell, and he knows too what the Farmers' Cooperative means to the railroad with its 25 or 30 cars a month of feed, coal, and materials. When the brakes grind for Glenview, he's telling, with a certain nostalgia, about the greenhouse that used to stand just east of the Morton Grove station and how a storm broke a lot of the glass and put the concern out of business. "That greenhouse was a good customer for the Milwaukee," and he gathers up the Glenview waybills.

While the rear end train crew carries on a bantering conversation with Henry Honeman, the station agent, the front end crew sets off a car of lumber for the Edward Hines Lumber Company and a car of building materials for Rugen Stores. Here, too, we pick up some outgoing l. c. l. The usual thing in small towns is inbound less than carload freight, but the Baxter Laboratories of Glenview ship medical supplies to all parts of the world, and some nursery stock is going out today from Swain-Nelson's. A full car of miscellaneous merchandise is set off on the house track, which is what the railroad calls its own freight house siding.

Several small boys on bicycles pull up and park in the shade of the depot while the 1251 does her daily dozen. Eternal fascination of the steam locomotive! Who was it said the railroad has lost its hold on the younger generation! Glenview is a busy, growing place. Out across the ex-fields to the west stretch dozens—hundreds, perhaps—of new houses,

houses attracted by the fast railroad commutation service which many a householder will use only as a mental salve: "Mighty handy in case the car breaks down or there's a blizzard."

Box cars are strung out into uncoupled groups on main line and siding as the crew plays its game of giant checkers, sorting the empties from the loads. Eventually the assortment on the main track is pushed together, the glad hands of the air hoses coupled up, and Extra 1251 is again ready to go.

Dapper Archie Davenport, front brakeman, comes back from the locomotive and there's a short confab about lunch. "Looks like we better go up to the brick yard and then 101 will just about be by before we finish eating." With the whole train tucked back securely in the brickyard siding a few miles north of Glenview and the switch locked for the main line there is an hour or so for lunch. There's an hour for Ed Bailey to tell about some of the pictures taken by his camera-fan brother-in-law. There is an hour for John Wilkins to recount (after proper persuasion) some of the lush details of his record 59-minute, 85-mile run between Milwaukee and Chicago on the *Hiawatha,* before some engineer with more seniority bumped him. There's time for Fireman Frank Callahan to kid the brakemen about the three 900-pound reels of cable which must be unloaded from the way car at Northbrook and to gloat over the fact that while he handles tons of coal he handles it by the shovelful and doesn't have to be a piano mover in the bargain.

Swish, bang, swish, there went No. 101, *Hiawatha* to you. "That's a train that can pick 'em up and lay 'em down. I bet there isn't any better in the country," says Red Johnson. Railroad men make believe now and then that they don't like their jobs and that they don't like the particular railroads they work for, but put an outsider within earshot and nine to one there isn't any better railroad in the country nor any better kind of work to do anywhere.

Lunch finished, the front end crew walks up the right of way to the 1251, uncouples some empties which the brick yard has ordered, and backs down the parallel siding track with them. The sun is hot by this time and the top half of the tender tank stands out dirty and dry against the perspiration of the water-cooled lower portion. Two full carloads of new brick are picked up, coupled into the front end of the train, and we amble up the line to Techny, where we pick up an empty tank car from the Cooskey Oil Company. A North Western 4-8-4, shrunk into a small

silhouette against the sky, ambles easily southwest toward Proviso Yard on the high line bridging the Milwaukee tracks south of the station. We watch the long, animated frieze of blacked-out cars and caboose on the horizon as Extra 1251 West rolls toward Northbrook.

Bailey tells meanwhile about the preparation of zeolite, a chemical used in water softeners. It seems that the Culligan Zeolite Company is located in Northbrook. It gets its raw materials in over the railroad and even today has five cars of finished water softeners ready to ship to a government project in California. It's a good customer of the railroad, and the train crew has a genuine and deep interest in each of the customers along the line. Also at Northbrook a full car of less-than-carload merchandise is picked up and the miscellaneous items, including the 900-pound reels of cable, are unloaded into the truck of Henry Bucher, who does the railroad pickup and delivery service on a contract basis.

The floor of the car begins to tremble, the doors vibrate, and a crescendo of noise builds up, roaring in my ears, and is as suddenly gone. "That was No. 6 on the other side of the train." Another *Hiawatha*.

Local freight all checked off, the clank of

Goodbye to Northbrook.

Just before leaving town the front part of the train is coupled onto the caboose and way car, which have been standing in front of the station (extreme left). Water pails have been freshly filled; l. c. l. freight is on platform trucks at right. Then as the train slowly gathers speed the crew swings aboard, assisted by the motion and the curved handrails of the caboose (left and below). And is there a railroad freight conductor who does not have a cheery smile and a wave for those who must stay behind!

Trains - Volume 1.

A rich, durable, cloth-covered and gold stamped bound volume of TRAINS (November, 1940, to October, 1941, inclusive) will soon be ready. It will be indexed and include a title page for your convenience. Edition very limited.

Postpaid _____$4.00

couplings works down from the front end and the train is together again. Conductor Bailey had ordered the train split in half at the street crossing so as not to block traffic. "No, it isn't the law which makes me do that. The law gives us 10 minutes during which we may block a crossing, but, after all, this railroad company gets business from Northbrook. We need the good will of the people here and we don't get good will by keeping the crossing blocked."

The afternoon clicks on. Deerfield, with its storage tracks for suburban coaches. West Lake Forest, and a car of wheat picked up. Rondout, junction with the Chicago Outer Belt Line and the Milwaukee's second subdivision to Janesville. No. 100, still another *Hiawatha*. North Shore cars gliding across the overhead bridge. Wilson station; nothing today. Gurnee, and a car of cattle added to our string. Wadsworth, squat brick interlocking tower and high-speed crossovers. Russel. "Think we can make Ranney before No. 9?" Wilkins calls down from the cab.

"Sure," and off we go. It's 4.6 miles and 15 minutes before No. 9 is due. Ranney siding is interlocked with power operated switches and is a very desirable place to go into the clear for a first-class train. The gray of twilight is creeping up in the eastern sky as we come around the curve with the Ranney home signal showing red over yellow. The 1251 lurches over the switch, into the siding. Seven minutes later a soft yellow glow grows brighter and brighter and emerges from the dusk as a light Pacific with its string of coaches and Pullmans, the *Copper Country Limited* to Green Bay and Northern Michigan.

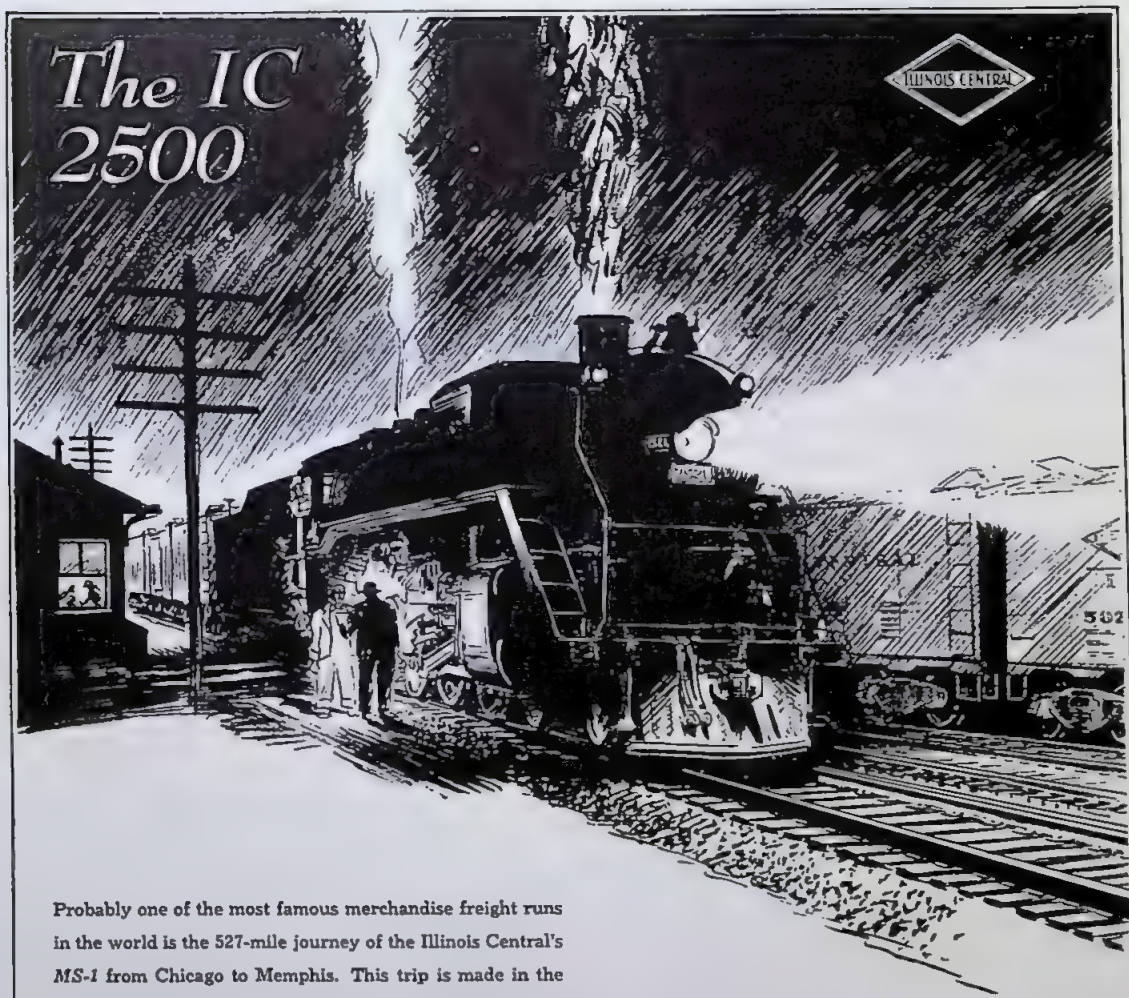
Day's work for Extra 1251 West is nearly done. One more stop before we tie up. Ahead of us for nine miles of tangent track to Sturtevant the signals are lined up like street lights, most of them green, but a yellow and beyond it a red way up where No. 9 has long since lost its identity in the night. In the middle of this stretch is Somers, waiting for one kitchen sink and some sink fittings, a bag of garden seed, one stove, and 25 cylinders of tank gas from Wisconsin Rapids. Somers is dark, the station closed until morning. A switchkey opens the freight house door and the sink, sink fittings, garden seed, stove, et al are set carefully inside.

The last few miles are always longest but sweetest. Sturtevant, junction with the Racine and Southwestern Division leading southwest through Beloit, Freeport, and Savanna to Omaha and Kansas City, is much alive with neon lights, station lights, and signal lights. The heavy engine of a time freight is busybodying around on a yard track. We get the call-on signal, drop what little train we have in the westbound yard, and Wilkins uses a Dutch switch (by which a favorable grade moves the car in place after the engine moves out of the way) to kick the caboose into a stub of track back of the water conditioning plant. While Wilkins is getting coal and putting the engine to bed, Red rolls up his sleeves and starts dinner. "Want to stay for steak dinner with us?" He explains that Monday is steak night, Wednesday is boiled dinner, and Friday fish or eggs. On alternate days the train ties up in Chicago and the crew members can eat at their homes.

Eating can be good in a caboose parked out under the stars amid the harvest smells of autumn. And railroad men are good cooks, too. The fireman acts as dishwasher. Bunks are pulled down from the ceiling and made up for the night. "We're up early tomorrow, for we not only work back along the main line but into Racine as well." The five men, who to station agents and carload customers along the line personify the Railroad, relax in the soft glow of the lamplight. Chirping of crickets fills the air. A loose connecting rod clanks slowly and irregularly down beyond the station. A yellow aurora grows to the west. It must be No. 361, local train to Milwaukee. The long station whistle of its Pacific sounds close and insistent.

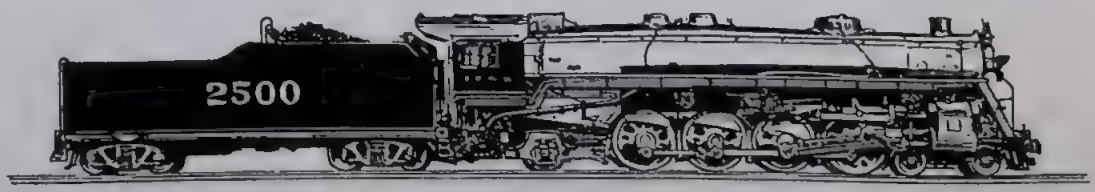
"Good night," calls the crew. "Come again."

The IC 2500



Probably one of the most famous merchandise freight runs in the world is the 527-mile journey of the Illinois Central's *MS-1* from Chicago to Memphis. This trip is made in the amazing time of less than 13 hours, and a 2500 series 4-8-2 usually hauls this fast train. There are 41 of this type in operation all over the IC system.

These locomotives are quite capable of maintaining the over 40 miles an hour schedule of the entire run, as the following specifications show: Built originally by Lima. Rebuilt at the IC's Paducah Shops in 1938, 1939, and 1940. Tractive force, 73,768 pounds; 70" drivers; 30" stroke. Weight on drivers, 266,351 pounds. Engine and tank 96'-4⅜" long.



Two sizes of tenders are used on the 2500's. The larger one has a capacity of 15,000 gallons of water and 20 tons of coal. The smaller tank contains 12,000 gallons of water and 17 tons of coal. The above drawing shows the smaller tender.

GIL REID

British Portfolio

★ England pioneered in public rail transportation, has vast trackage net.

British Isles.

When the first railroads were built they were short, usually connecting a mine with a wharf, or perhaps they were between two nearby cities. The railroads in England, Germany, United States and other countries did not differ greatly from each other until progress required that they be tailored to their homelands. In the United States lines were long, often in mountainous country. They needed locomotives that could operate over long sustained grades and around sharp curves. In Europe, and especially in England, the lines were shorter, serving a much more densely populated region in a rolling countryside. So it is really quite natural to expect many differences between North American and English trains and track.

These photographs were taken in 1937 by H. W. Pontin of Railroad Photographs* and they show many phases of British railroading. The railroads, all short and direct, rarely have main line curves sharper than a mile radius (about 1 degree; U. S. railroads occasionally have 10-degree curves on main lines). The longest lines are from London into Scotland: the London & North Eastern (solid lines on map), and the London, Midland & Scottish, commonly called the Midland (dotted lines). Not long after World War I many of the railroads were consolidated in a

* Railroad Photographs, 47 Royal St., Allston, Mass.

Scarboro Flyer.

This LNER Summer train serves the salty resorts along the northeast coast. Locomotive 2558, a fine example of English design, has three cylinders and 4-6-2 wheel arrangement, and is called *Tracery* for one of the famous race horses at St. Leger, Doncaster, where the engine was built.

The Silver Link.

Midday Scot.

government-supervised reorganization at which time the London & North Western became part of the Midland, and the Great Eastern became LNER. Due west of London are the lines of the Great Western (also solid lines on map) famed as the broad gauge before its entire system was brought from seven-foot gauge down to 4′-8½″ in the seventies, eighties and nineties. Between London and the various channel cities to the south is the Southern, much of which is electrified.

The rails are of the bullhead type, a sort of dumbell-like cross section. They rest in chairs upon the sleepers and are wedged tightly to gauge with wooden wedges driven into the outer side of each chair. There are very few public grade crossings, so locomotives carry no headlights, cow catchers, or bells. Link-type couplers are much used, but buffer plates are located at both sides to absorb train shocks. This, coupled with a clean, low

Holiday excursion.

LMS No. 4100 is a high speed 0-6-0 hurtling a holiday excursion train through the gates of a grade crossing in the mountainous Peak district. Notice railfans. The *Silver Link*, above, is one of the streamlined LNER trains, New Castle to London. Locomotive No. 2510 is a three-cylinder Pacific named *Quicksilver*. The *Midday Scot* is climbing the stiff grade at Shap Summit in scenic Westmoreland. It reaches this region at twilight, glides on toward Glasgow in darkness. The *Royal Scot* type three-cylinder locomotive, No. 6153, is named *The Royal Dragoon*.

London Express, LNER.

Stations are often nearly a hundred years old in England. This is Top Bank in Darlington, upper terminus of the Stockton & Darlington, first railroad for public use. The engine is LNER No. 2575, named (on a brass plate) *Galopin*. This Pacific is a sister to the one on page 14. Station was recently destroyed by bombs.

lined boiler, gives the English locomotive a very characteristic appearance. The size of equipment is restricted to a width of about nine feet and a height of about 13½ feet, compared with 10½ and 16 feet in the United States.

Best know train is the *Coronation Scot,* London to Scotland on the LMS, schedule and distance very similar to the fast Chicago-St. Paul trains in this country. This service has been modified during the present European war.

British railroad terminology is quite different from ours but often most sensible. Here are a few samples: Car, wagon; passenger car, carriage; truck, bogie; switches, points; trainman, guard. Trains operate mostly on double track, left hand running, and the track from London is called the Up Main, toward London the Down. All passenger stations have high platforms like some of those in our Eastern cities. This is a great convenience and time saver, especially since the cars on local trains have a door for each compartment all along the sides of the cars.

English semaphores are rather cumbersome (see photos, next page) and are operated by pulling wires.

Bombed locomotive.

This engine, LNER No. 3462, an 0-8-0, was badly damaged a year ago in an air attack. (Photo courtesy *Railways* magazine.) Above is another LNER train at Stevenage, the *Scotch Express*, competition for the Midland. The engine, *Manna*, No. 2596, is equipped with a corridor tender so crews can change en route.

Driver's side of *Fiji;* double header for Haysham.

This businesslike 4-6-0 is No. 5607 of the LMS, backing to hook up with the *Peak Express.* Notice the American style tender design. The engine is a recent design using four cylinders. Numbers classify it as a holiday excursion train. Below: Two 4-4-0 locomotives leaving St. Pancras terminus in London on the *Haysham Harbor Limited,* an Irish boat train. The station was later destroyed in a raid. The front engine, No. 438, is inside connected; the second locomotive, No. 1102, is newer, a three-cylinder compound.

Record Railroad Building

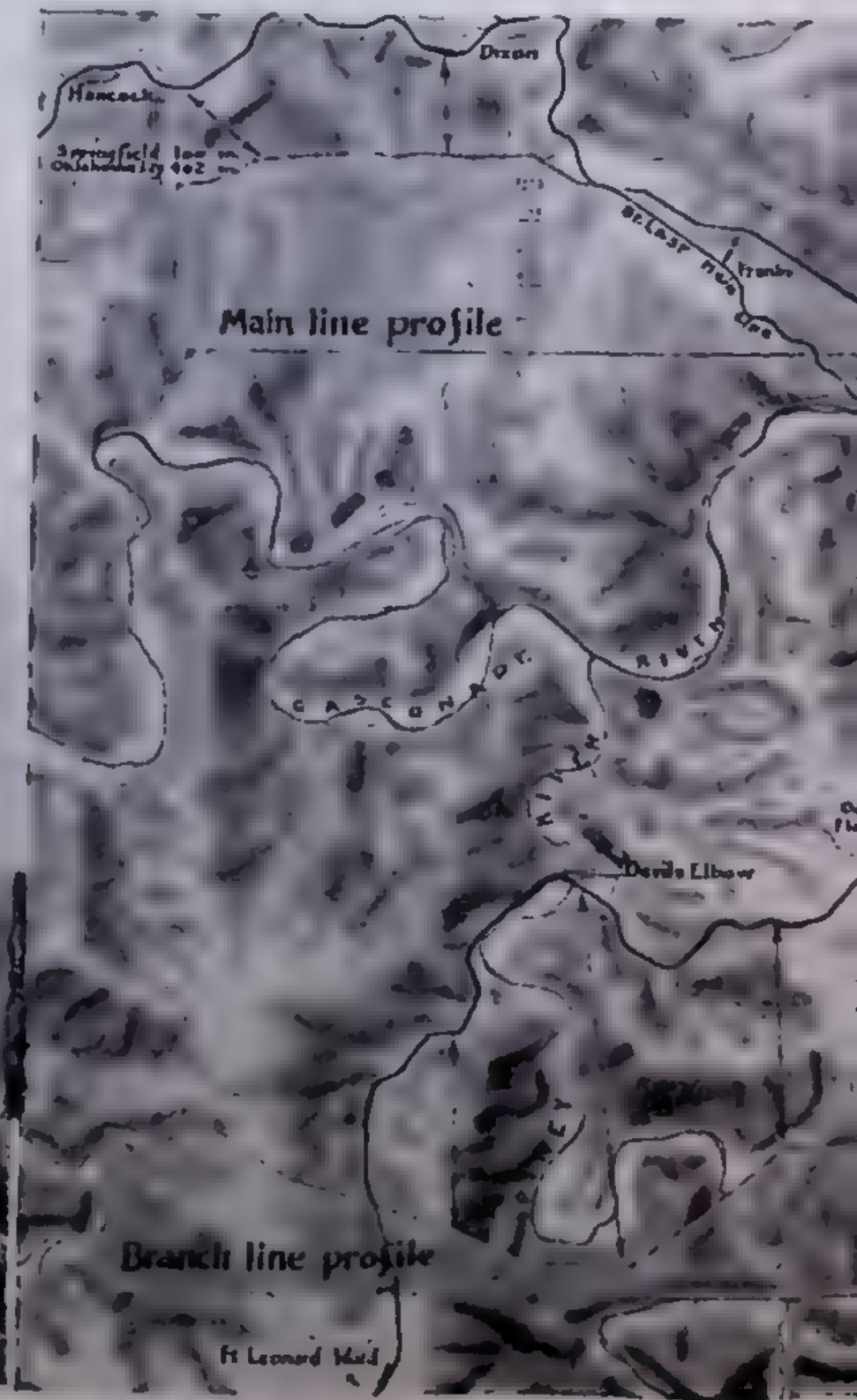
★ 20 miles of iron in less than six months: an achievement of defense program.

NOVEMBER, 1940: Fort Leonard Wood existed on paper only, in the offices of the United States War Department. Six months later the fort existed in reality. Barracks, warehouses, highways, and a fully operating railroad were built within that period, to give living and training facilities to 40,000 officers and soldiers high in the Ozark Mountains of Missouri, within the boundaries of Mark Twain National Forest. In so doing a railroad construction record was established that has no comparison. On December 5, 1940, the first grading was started and on April 19, 1941, the first passenger train was operated over the 20-mile line. Chief Engineer R. F. Bundy has stated that he would prefer to build a railroad twice the distance in the Rocky Mountains rather than attempt another such line in the Ozarks.

Fort Leonard Wood is located about 22 miles southwest of Newburg, Mo. It includes 85,000 acres of reservation and 12,000 acres of camp site, and serves the Seventh Corps Area, made up of the states of Missouri, Iowa, Arkansas, Kansas, Nebraska, South Dakota, North Dakota, and Minnesota. Geographically the fort is situated on the upper end of a ridge that extends northward from the range dividing the Missouri and Arkansas rivers. The nearest main line railroad is the St. Louis-San Francisco Railway, approximately 19 miles to the north. Arlington, on the Frisco, is the

Bundy Junction.

On the Eastern Division of the St. Louis-San Francisco main line, 2½ miles west of Newburg, the new government railroad has its start. Terminating at Fort Leonard Wood, nearly 20 route miles from Bundy Junction, the line traverses the difficult terrain of the Ozark Mountains. Bundy Junction was named in honor of R. F. Bundy, the man who designed and supervised the building of the line, which is to be used by the government for purposes of national defense. Many difficulties were encountered during construction, and in the opinion of engineers who design railroads this line is one of the most outstanding building accomplishments in the entire United States.



All photographs courtesy St. Louis & San Francisco Railway.

nearest siding and is 3½ miles west of Newburg.

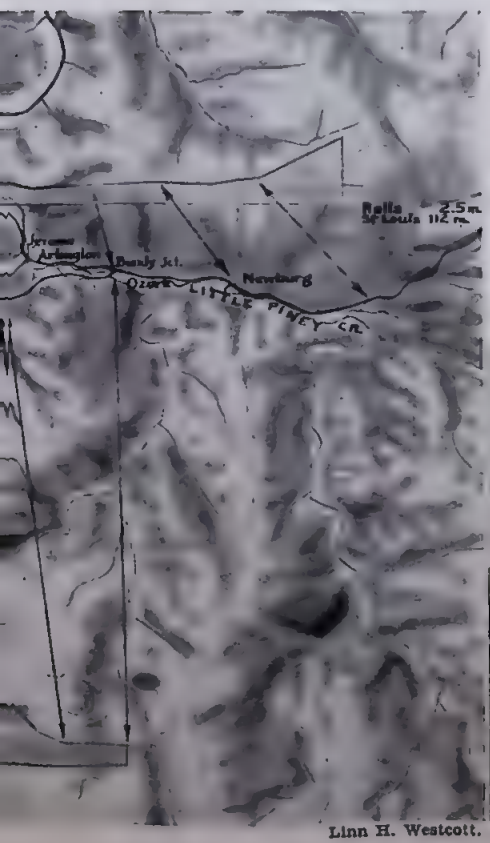
The new government railroad to the fort connects with the Frisco main line at Bundy Junction, named in honor of R. F. Bundy. This junction is 2½ miles west of Newburg and it was here that grading was started on December 5, the actual line location having begun on November 14. Heavy construction began January 23, and date of completion was set as May 25.

Through cold, snow, rain, and mud, hundreds of machines and thousands of men toiled. Over a period of a few short weeks, 1,900,000 cubic yards of excavation was moved, 25 per cent of it solid rock. No maps of accuracy could be used, for there were none but recently finished geodetic survey maps. At Bundy Junction the elevation is approximately 697 feet above sea level. Between the junction and Fort Leonard Wood is the Little Piney River at an elevation of 672 feet; Oak Flats, a divide, with an elevation of 1075 feet; Big Piney River, whose elevation is near 700 feet; and Fort Leonard Wood itself, sitting 1118 feet above sea level. Small streams in the territory run through deep valleys, their stream gradients ranging from 2½ to 3½ per cent. The maximum grade for the railroad was set at 2¼ per cent, curvature compensation being .04 per cent per degree.

Coinciding with the start of the railroad location was the construction of Fort Leonard Wood. Mud and the lack of roads immediately caused trouble, trucks breaking down before they could carry material more than a few hundred feet. Contractors then erected five rock crushing plants and built a total of 56 miles of highways, one a four-lane road leading to U. S. Highway 66.

Trains' annual index.

A comprehensive annual index for the first volume of TRAINS (November, 1940, to October, 1941, inclusive) is now in preparation. A copy will be sent to any reader upon request.



Linn H. Westcott.

The Fort Leonard Wood line.

On November 14, 1940, a group of railroad locating engineers met at a spot near the center of Mark Twain National Forest, in Pulaski County, Mo. Five and one-half months later they had succeeded in designing and supervising the construction of a railroad to Fort Leonard Wood. This topographic relief map shows the rolling country of the Ozark Mountains over which the line twists and turns, following as closely as possible the courses of the rivers and streams in the area. From the starting point at Bundy Junction the line climbs 403 feet to Oak Flats, drops 377 feet at Big Piney River, then climbs 420 feet to the terminus at Fort Leonard Wood, shown below.

A cut through rock. Every available Diesel-powered machine was used. Air compressors broke the rock. Bulldozers pushed it into piles; shovels loaded it into trucks.

Above: Heavy graders leveled the roadbed, enabling track gangs to keep pace with the work. Below: A 39-foot, 1400-pound section of rail being swung into position.

The short time did not allow drilling to determine the amount of rock in the 68 cuts during the location of the railroad. When it became evident that there would be a large amount of rock excavation, contractors brought rented equipment from states as far away as Minnesota, Colorado, Texas and Pennsylvania. Variations in the side slopes of the cuts are ½:1 and 1:1, in rock; 1½:1 in earth. Summit Cut, the largest on the line, is 3150 feet long, 46 feet deep at the center line, and required the removal of 105,000 cubic yards of rock and sandstone and 83,000 cubic yards of earth. Over the entire line the average daily removal of rock was about 45,000 cubic yards, and a total of 385,000 pounds of dynamite was used to blast it.

Most of the grading equipment was operated by crews that came to the location with it, which would have been fine if the machinery were to be used only on one shift a day. As it was, there were three shifts of 9, 8 and 7 hours each. It became necessary to make "operators" out of what were ordinarily mechanics and greasers, then draw from the ranks of the unskilled laborers to replace the latter. Some idea of the difficulties involved in such a method of training can be seen when we consider that during the peak employment period, some 3000 men were at work under the supervision of 60 engineers.

In addition to the 68 cuts there are also 68 fills. Of these, the longest is 9000 feet and is located just south of Little Piney River, near the beginning of the line. From the yardage angle, as well as that of depth, an even bigger fill was necessary at Milepost 17½, near the end of the line. It is 62 feet in height and required 141,800 cubic yards of rock and earth.

Along the line are three steel truss spans totaling 468 feet, and 16 timber trestles totaling 3681 feet. At each end is a wye, while at the camp end, in the warehouse area, nine tracks make up a yard. There are four passing tracks, each 2000 feet long, and the yard, wye and passing tracks total 6.62 miles. Of the 20 miles of main line track the straightest stretch is only 2700 feet. Because of the terrain, 70 curves are

necessary. Maximum curvature is 8 degrees.

Work progressed with clock-like precision. As rapidly as surveyors' stakes were planted, grading crews commenced their work. The valleys were filled with earth leveled from the hills by giant scoops and shovels. As soon as the earth was dumped from huge trucks, massive "bulldogs" and graders leveled it to form the road bed. Heavy rollers with cleats were then used to pack the dirt, saving weeks of time ordinarily required to settle fills. The grading crews were followed by track-laying crews, of which there were five groups working at once on various sections of the railroad. Following the track layers were work trains moving back and forth, bringing up supplies. Day and night, stopping for nothing, the work went on.

A system of upper quadrant semaphore type automatic block signals has been installed. Although no more than six trains a day each way are regularly expected to run between the Frisco main line and Fort Leonard Wood, the war department wants capacity to move the entire personnel out of camp on troop trains in case of an emergency. That is the reason for the otherwise inexplicable block signal system.

The first passenger train consisted of the construction dinky and two flat cars converted into observation cars. It made the run on April 19, and its passengers were high-ranking army officers, Frisco executives, and St. Louis business men. On May 13 the first troop train was operated into the fort. The official opening of the line took place on May 25, the day set for the completion of the road.

Therein lies the record. In itself it is a fitting tribute to the men who made it: Col. Frank G. Jonah, chief engineer of the St. Louis-San Francisco Railway; members of the Frisco engineering and maintenance departments; the thousands of men who toiled through heat and cold; and Chief Engineer R. F. Bundy, railroad builder, who constructed from scratch to finish a three-million-dollar railroad, a job which would ordinarily have taken two years, in less than six months.

By comparing the men working on the track, some idea of the depth of this cut may be gained. Typical of the size of the boulders encountered is the "little" rock at right.

Above: This is "Bunk House Bridge," one of the 15 timber trestles along the line. Below: The steel spans on this bridge are 304 feet long, the approaches 1485 feet long.

Of Peter Helck

★ A commercial artist who in his spare time paints the things he loves, and his paintings show it.

ACRID smoke and throbbing steam are important ingredients on the palette of Peter Helck, whose artistry combines paint and canvas with the elusive qualities of Power to record a forceful impression—an impression visual, aural and vibrantly sentimental—a portrait of Railroading, of what it is and what it means.

Peter Helck is a successful commercial artist of New York City and Boston Corners, a three-time winner of the Art Directors Medal, top award in advertising circles. His painting "Steam, Smoke and Snow" won the Allied Artists Medal in New York, and was also shown at the Exhibition of Contemporary American Art at the World's Fair in 1939, as well as at other notable shows. Recently another of his railroad subjects, "Fast Freight," won an award at the Kansas City Art Institute.

The Peter Helck pictures on these pages are part of a group of 15, all railroad subjects, now on exhibition at the Theodore A. Kohn Galleries, 609 Fifth Avenue, New York City. The galleries are open from 9:30 a. m. to 5 p. m. week days; 9:30 to 1 p. m. Saturdays, and there is no charge. The exhibit will close October 10.

"In my spare time," says Peter Helck, "I paint those things I love, such as the land-

Peter Helck calls this "Giants at Rest."

This impressive World's Fair scene was painted as powerful searchlights fingered the night sky. To the left is one of the Pennsylvania Railroad's famous GG-1's. On the right stands the *George H. Emerson*, an experimental 4-4-4-4 type locomotive belonging to the Baltimore & Ohio Railroad. It is a Class N-1, road number 5600, and was built for passenger service by the B&O at its Mount Clare Shops (Baltimore).

From an exhibition of paintings by Peter Helck.

From an exhibition of paintings by Peter Helck.

"Steam, Smoke and Snow."

Painted in tempera on a gesso background, this vital portrayal of a Winter railroad scene won the Allied Artists Medal for Peter Helck. The No. 1141 is a Class L-1s Pennsy locomotive built in the railroad's Juniata Shops at Altoona, Pa., in 1915. Below: Artist Helck at work. The locomotive he is sketching is a New York Central 4-6-2 type, Class K-11e, No. 4553, and was built by American Locomotive Company in 1912.

scapes of Spain, Italy, and our own Southwest, my farmer neighbors here in Boston Corners, all manner of train subjects, and my other pet subject, old-time automobile racing. Indeed, my interest in old cars is such that I have a small collection of rather ancient cars. I regret the lack of space and means that keeps me from collecting old trains, and for that reason I was a constant visitor at the Fair, where I came to know the old veterans.

"It was here, mostly at night, that I made the pictures that are now on exhibition, and in the subdued nocturnal light I prowled about with real reverence and respect, sketching and drawing feverishly—until one night a watchman approached me with great anger and forced me out of the yards."

From an exhibition of paintings by Peter Helck.

"Galloping Ghosts."

Engine No. 117 is the *Thatcher Perkins*, a Ten-Wheeler put into service on the Baltimore & Ohio Railroad in 1863. The two old-time coaches to the right are typical of those used in the period of 1835.

From an exhibition of paintings by Peter Helck.

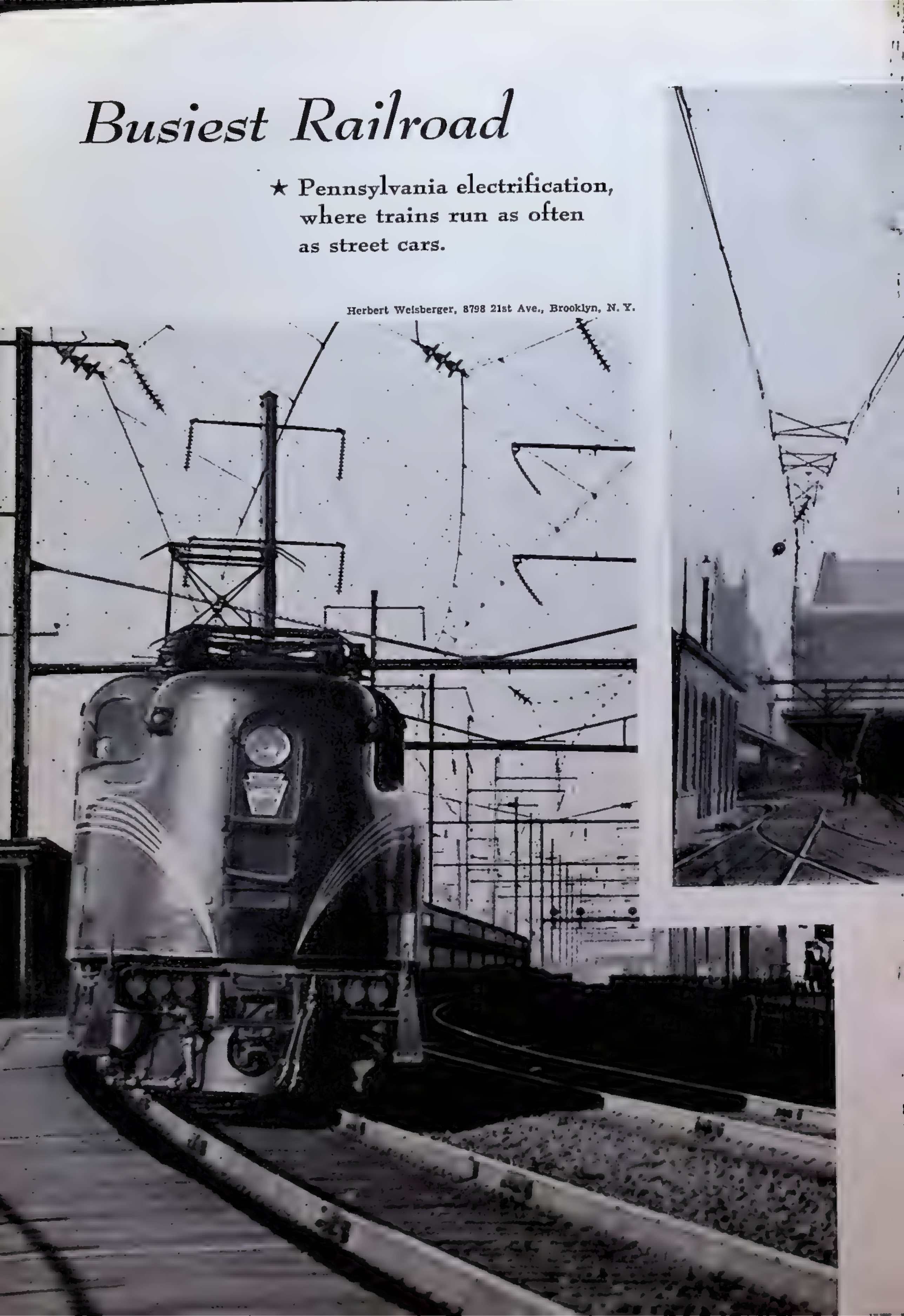
"Faded Pomp."

" . . . for people who, like myself, love railroading in all its phases, some of the paintings show the old pioneers," writes Peter Helck of this Fair picture, which he painted "in the subdued nocturnal light."

Busiest Railroad

★ Pennsylvania electrification, where trains run as often as street cars.

Herbert Weisberger, 8798 21st Ave., Brooklyn, N. Y.



Courtesy General Electric Co.

WILLIAM PENN looks down from the top of the Philadelphia City Hall upon the city he founded, and upon something of which he never even dreamed, Broad Street Station of the Pennsylvania Railroad. Here all Philadelphia-terminating Pennsy trains begin or end their runs.

The most famous trains pass through North Philadelphia or 30th Street stations, both on main lines, but the busiest trains are the hourly "clockers" to New York City and they use the old stub station in the shadow of the City Hall. Steam trains to points off the electrified lines also leave from Broad Street's ample spaces.

Even, smooth power for heavy passenger service on the main lines is furnished by the Class GG-1 electric locomotives, the first of which, No. 4800, is shown above ready to leave Broad Street with a clocker. The train at the left is on the world's busiest railroad, New York Division of the Pennsy, curving through Elizabeth, N. J., at 70 miles per hour. This beautiful speed shot was made with a Graflex with lens opened to *f*. 4.5, and shutter speed of 1/440 second.

Guardian of the Rails

★ **The Sperry Rail Service fleet is constantly moving over America's iron.**

By Harold Bosch.

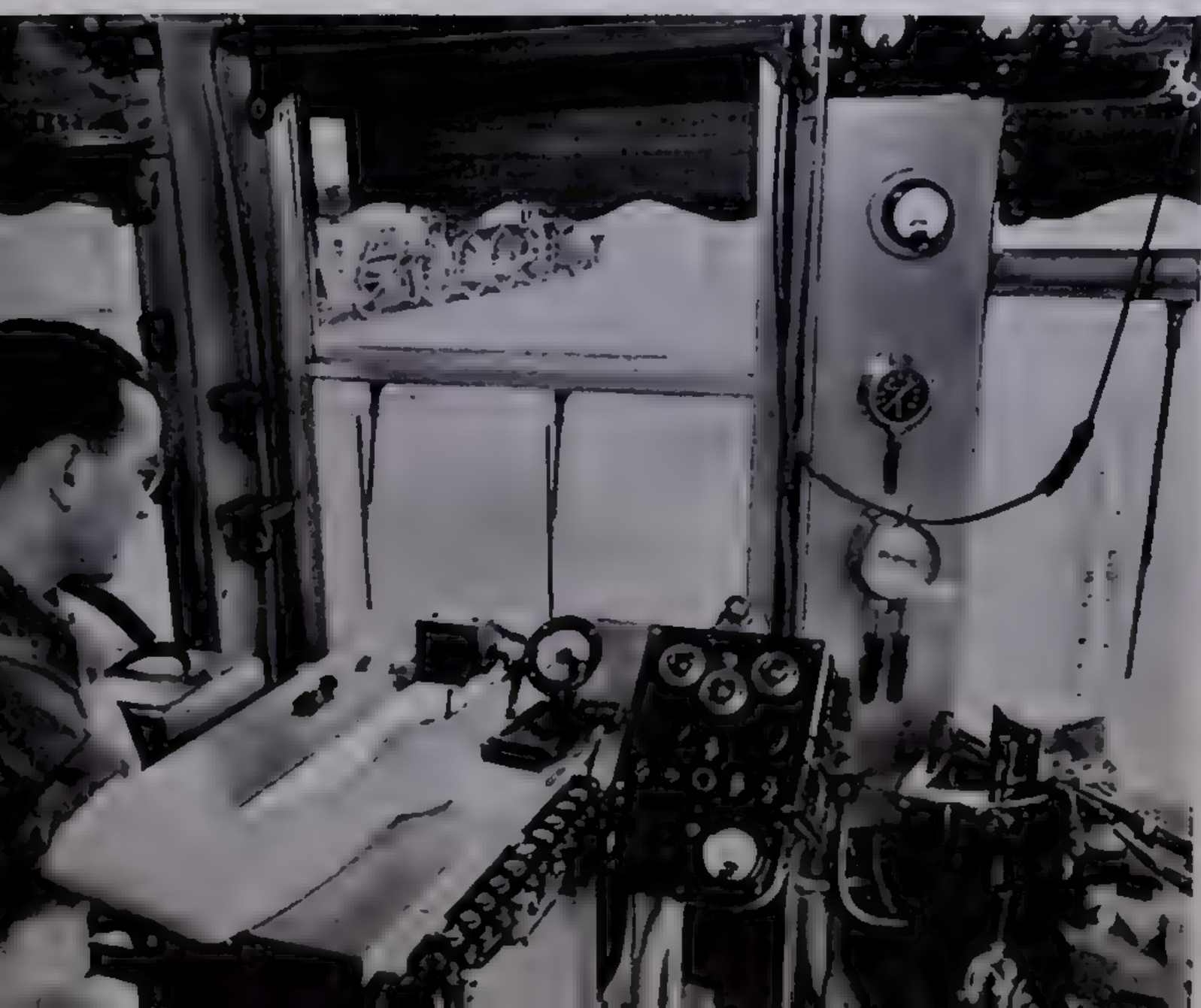
The old trackwalker comes down the section, worn shoes crunching against the sharp crushed-rock ballast. For years he has gone over this road day after day, fine-tooth-combing it for loose spikes, bad ties, cracked rails, to say nothing of landslides, rocks on the track, and washouts. But now his bright eyes are supplemented by a marvelous technical development, a veritable Martian mechanism that sees right through the rail and not only locates defects the trackwalker can't see but foretells other defects before they can ripen into broken rails and lost lives.

The Sperry Rail Car it is that lifts from the trackwalker the tremendous responsibility of safety in rail travel, that makes rail travel safer than even this safe mode of transportation has ever been before. Moving slowly along the track, spitting whitewash from time to time across one rail or the other, the Sperry cars cross and recross the country preventing broken rails before they happen. At six to eight miles an hour they probe with electric fingers into the very heart of rails over which they travel. Every abnormal detail is registered on a tape in an electrical laboratory built into the car.

The primary causes of rail failure are doubtless due to inherent defects in the steel, but of equal importance are failures that occur after the finished rail leaves the manufacturer. Rough handling, poor track construction and maintenance, improper operation, overloading, and defective equipment all contribute a share toward rail failure. In spite of such an imposing list, less than one-tenth of one per cent of rails used have been found to fail in service, but that is enough to make such failures very serious because of the consequences that may result when even a short section of track breaks.

Rail failures are classified according to the nature of the defect causing them. The most common are termed: flow of metal, crushed and split heads, split webs, broken bases, and transverse fissures. The last is the most dreaded. It was first recognized as a direct cause of rail failure in 1911, and for 17 years it became established as the greatest defect that is found in rails. As cancer grows in the

Courtesy Canadian National.



Rear view.

This picture shows Chief Operator S. Ratcliffe checking the recording tape upon which details concerning the condition of the rails are automatically marked. The tape moves $\frac{1}{16}$ inch to every foot traveled by the detector car.

Courtesy Canadian National.

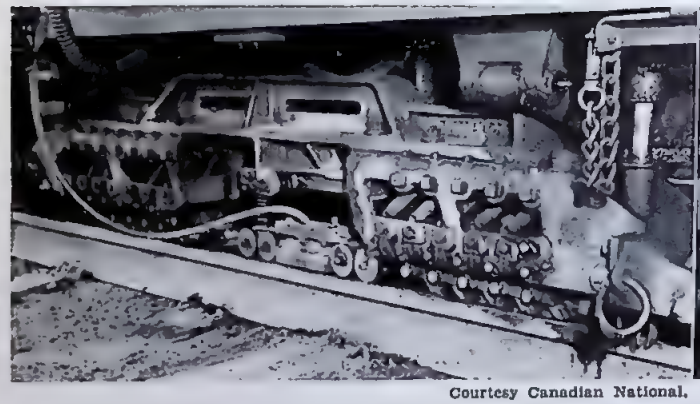
Mechanical trackwalker on the job.

A Sperry detector car operating over the lines of the Canadian National Railways. Every inch of the track is tested as the car moves along at the rate of six to eight miles per hour. It foretells minor defects long before they can ripen into broken rails and lost lives. The detector is self-propelled by gas-electric drive.

body, so a transverse fissure grows in a steel section of railroad track. In fact, so alike are the two that transverse fissures are commonly referred to as "rail cancers." The A. R. E. A. describes a transverse fissure as a progressive transverse fracture starting from a center or nucleus inside the head of the rail from which the fracture spreads. Where it has caused a break in the rail a round or oval spot is observed, smoother than the surrounding structure and at right angles to the axis of the rail. When the transverse fissure is first exposed to air it is brighter than the adjacent unaffected metal.

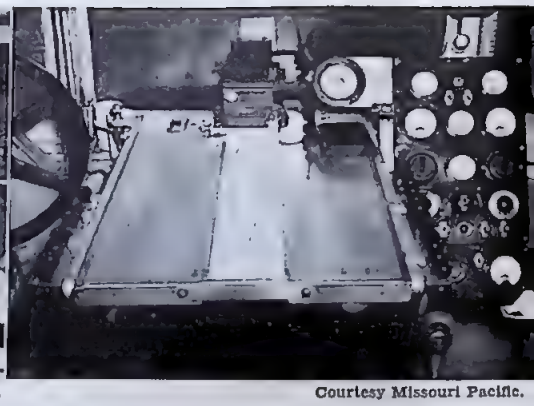
In 1928, after five years of determined and intensive research, the late Dr. Elmer A. Sperry designed and constructed electrical equipment that would detect transverse fissures. Basically it operates by passing a current of 3000 amperes through a short section of rail at low voltage. This sets up a magnetic field about the head of the rail. When an internal flaw is encountered the axis of the field is changed and the flux distorted. By means of a coil placed on the head of the rail, the distortion is picked up and passed through a cable to an amplifying device, which in turn indicates upon a recording tape. Dr. Sperry incorporated the entire apparatus in the first Sperry detector car in 1928. Such were the improvements made during the next few years on successive cars that for every 100 miles of track tested in 1938, 25 fissures were found, as compared with eight fissures for every 100 miles in 1930. In addition, a detector car registers on its series of complicated meters and graphs such flaws as horizontal and vertical fractures, surface defects, burned spots caused by slipping wheels, and even loose spikes.

In 1931, through the joint sponsorship of the A. R. E. A. and the Rail Manufacturers' Technical Committee, a probe into the matter of the transverse fissure was instigated. The



Courtesy Canadian National.

This brush carrier under the detector car forces a heavy current through the rail head. Any flaw will act upon the magnetic field, disrupting the lines of force, and is instantly recorded.



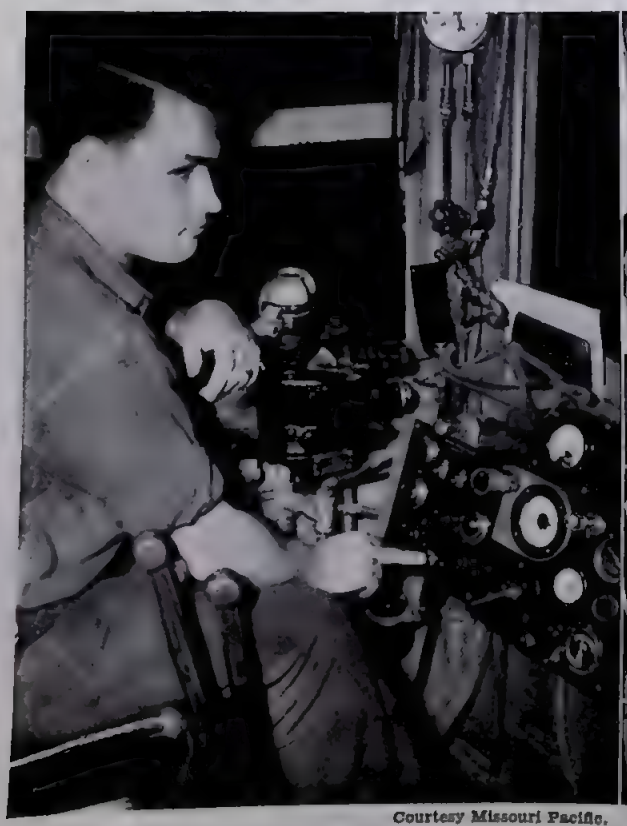
Courtesy Missouri Pacific.

As the brush carrier slowly rides along the rail, flaws are electrically recorded on this tape as it moves $\frac{1}{10}$ of an inch to each foot the car travels.

data compiled showed that minute shatter cracks were present in the rail after it went through the rolling mills and that when wheel loads were constantly applied to areas in which the shatter cracks were prominent the growth of transverse fissure soon followed.

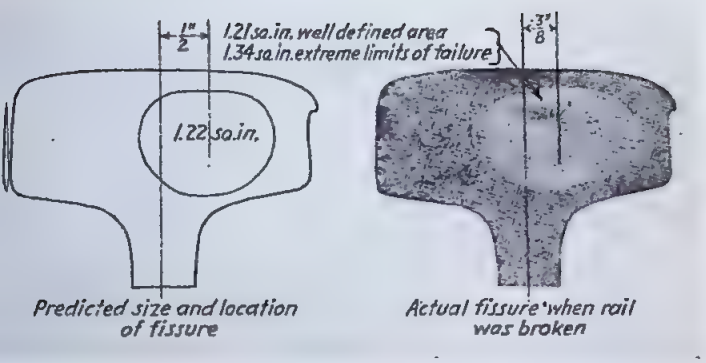
However, the shatter cracks and their spread by wheel loads on rails in service are only two of the causes of transverse fissure growth. It is known that a sudden rise or drop in temperature, or a heavy blow on the rail head with a spike mallet, or grinding by a

Two different control room arrangements found in Sperry detector cars. The drivers, in both cases, operate the car as well as the panel board located nearby, which automatically marks, on a recording tape, such things as culverts, bridges, signals, rivers, and buildings. These views are of the working end of the detector car.



Courtesy Missouri Pacific.

Courtesy Canadian Natior



A graphic illustration showing the degree of accuracy obtained by the intricate apparatus on a Sperry Rail Service detector car. This is one of the many reasons for their being kept in continual service.

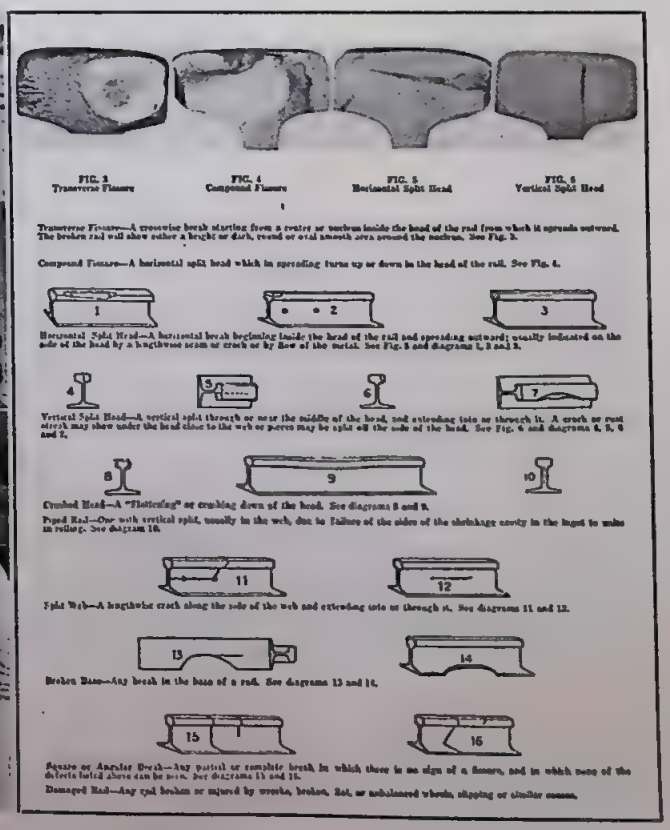
locomotive driving wheel, will sometimes cause a transverse fissure to begin its growth. At other times it will appear suddenly, without apparent cause. Therefore, with modern trains attaining high speeds, and with ever-increasing axle loads, it is necessary that detection technique be of the highest possible standard.

The crew of a detector car is carefully selected. Each man must have a high scholastic rating and be painstakingly trained for the work. For 11 months out of the year the detector car is the home of the crew, which is made up of the chief operator, assistant operator, driver, and chef.

Sperry detector cars are painted a bright yellow with black letters and figures adorning the sides and ends. Usually the roof is painted with aluminum. The front of the car houses a Winton engine that sits crosswise behind the driver's seat. A partition divides the engine room from the galley, the next compartment following. Here there is a stove, water heater, electric refrigerator, sink, cupboards filled with dishes, and a food storage bin. From the galley to the dining-living room compartment is but a step through a doorway. This room is fitted out with com-

When the recorder tape shows a serious defect the operators stop the car and make thorough hand tests. Below: The operating crew enjoys a good meal.

This A. R. E. A. chart shows the various types of flaws that cause rail failure. Every type is recorded on a tape in the laboratory of a Sperry car as it moves slowly over the tracks.



fortable chairs, a table, radio, magazine stands, closets, and on one side a long leather covered window seat. Following the living quarters is the four-man bedroom fitted with individual bunks and clothes closets. Next is the bathroom containing lavatory, bathtub, and showers. Hot and cold running water is available at all times. The next to last compartment is the section which houses the main generating equipment of the testing system, run by a 150-horsepower gasoline engine. Tool cabinets, work bench, a Hercules gasoline-driven generator for the lighting system, and water tanks are also crowded into this small room. The rear compartment is in reality a glass-enclosed rear platform. Here the actual tests are conducted.

As the electric apparatus registers a flaw beneath the wheels of the car a daub of paint is automatically shot onto the rail at the exact spot. The operator is notified by an inked indication on a wide recording tape that moves 1/16" to every foot the car travels. He then stops the car and, with the assistance of other members of the crew, makes a thorough test to determine the exact nature of the flaw. If it is found to be serious, notification is given to a section crew that follows the test car. The defective rail is then replaced.

A record over the past 10 years shows that railway passengers in North America have been carried over three billion miles for each fatality. Heavy trains whirl along at tremendous speed, yet the passenger has the confidence of knowing that every precaution known to modern science is used to protect him on his journey.

Many travelers doubtless wonder how the rails stand up under the terrific abuse given them by swift streamliners and heavy locomotives hauling long strings of loaded freight cars. Railroad track must stand in the open and take whatever nature chooses to hand it. Ice and snow, low temperature and high, all play an important part in the life of the rail. It is little wonder, then, that a fleet of Sperry Rail Service detector cars is in constant operation throughout the year. They are the guardian angels of the rails, carrying on their vigil without interruption, safeguarding railroad property and employees as well as the railway passenger.

Cars of Many Railroads Roll Together in Test Runs

James E. Bennett, 19 Highland Rd., Stamford, Conn.

Here are Santa Fe stainless steel passenger cars in operation on the New York, New Haven & Hartford through Stamford, Conn., going east, train No. 96. For three days these cars, together with cars of the New Haven, Pennsylvania, Maine Central, Boston & Maine, New York Central, and Northern Pacific (the last an express refrigerator) shuttled back and forth as a test after their completion at the Budd plant in Philadelphia. Photographed April 20, 1941, shortly before the cars were delivered to their respective roads.

Arthur Stensvad, P. O. Box 634, North Platte, Neb.

Along the main line of the Union Pacific.

Engine No. 2870, a Pacific or 4-6-2 type with an enlarged stack, brings the *Omaha Boosters Special* into North Platte, Neb., on May 5, 1941. Here, along the original transcontinental railroad of the United States, may be seen continuous train movement, for the Union Pacific is one of the busiest railroads in the country. North Platte is close to the junction of the North and South Platte rivers, from whose banks extend the large ranches of the alfalfa region. The steam above the baggage car is from the relief valve of the turbine used in the head end system of lighting.

Dana M. Goodman, 356 Main St., Fitchburg, Mass.

A Climax pulls the *Railfan Special.*

The Union Freight Railroad of Boston operated 70 years before it handled this, its first paying passenger train. Members of the New England Division of the Railroad Enthusiasts have loaded themselves upon a New Haven maintenance car and are riding down Atlantic Avenue on the two-mile-long UF RR.'s main line. The locomotive is a beshrouded Climax geared job—low speed, high pull. This railroad connects New Haven and Boston & Albany facilities at South Station, Boston, with cold storage plants, industrial buildings and wharfs, and with the Boston & Maine at North Station. Most of the track is on Atlantic Avenue. Taken July, 1940.

"Gone are the days."

These locomotives are no longer young and gay, 'tis true. Yet in the days of their glory, they must have been gay, for while most larger engines were hard at work seven days a week, these two only worked six days. On Sunday they rested, for it was in their company charter that they should never work on the Sabbath. Only once was the rule broken, to rush a man to a hospital. For over 30 years they never (knowingly) hauled one drop of whiskey; never killed or injured a person; never were involved in a lawsuit and never had an accident. Their railroad was the Due West Railway, a standard gauge line recently abandoned. It operated from Donalds, S. C., to Due West, four miles distant, and connected with the Southern Railway and the Piedmont & Northern Railway. No. 2 once ran on the New York elevated; both engines are now scrapped. No. 3 was built by the Glover Machine Works, Atlanta. Old Forney elevated engines turn up unexpectedly every now and then.

F. E. Ardrey Jr., Aiken, S. C.

Four locomotives to work West Virginia Northern's 11 miles of track.

The proud *Diplomat* and *National Limited* of the B&O don't even pause at Tunnelton, W. Va., on their flying way from Cumberland, Md., to Cincinnati and St. Louis. Tunnelton has only 595 population, barely enough to rate stops of the B&O local trains. But to West Virginia Northern it is a terminal and only connecting point with the outside railroad system. Other terminal is Kingwood, population 1709, 11 miles northeast and over a ridge. The road owns four locomotives, Nos. 8, 9, 11, and 12, all Consolidations and quite similar. No passenger service is operated. Kingwood, home of WVN's operating offices, is on the Cheat River Branch of the B&O, which loops up into the town but does not connect with the WVN.

Donald W. Furler, 65 Glen Ave., Glen Rock, N. J.

William Moedinger Jr., 23 E. Vine St., Lancaster, Pa.

Memory of Pagosa Springs.

Back in '33 you might have seen this little train waiting at Pagosa Junction on the Durango line of the Denver & Rio Grande narrow gauge. Here you have, in a single car, facilities for passengers, mail, express, l. c. l. freight, and the caboose cupola. Pagosa Springs, a short ride away, was an important sheep center and resort, but the branch line was abandoned because much of the traffic into the region was sent by rail only when the highways were blocked. In severe Winter weather many sheep have been lost since the railroad was pulled up. The nearby Santa Fe Branch, featured in September TRAINS, will be torn up this month, according to reports, again due to lack of sustaining business. Service was discontinued September 1.

Cajon Pass

★ Where trains descend from cactus to the groves of the Orange Empire.

By Howard Eichstadt.

RAILS cannot come to Southern California from random directions, as they do to Chicago or Kansas City; they must seek openings through the towering mountains circling protectively around the region. Each route has its pass, each pass has its story, and no one can say which story has the greatest romance. Santa Susanna, Soledad, Carriso, Tehachapi, San Timoteo, Cajon (*Kah-hone'*)—they all spell lonely mountains and stiff grades, wide-cracked exhausts tearing holes in the sky to echo and re-echo through cut and canyon, wrecks and washouts, Ten-Wheelers and 4-6-6-4's, operators copying orders on desks that have known no darkness for 70 years. Millions of passengers and billions of tons of freight have been guided and hauled, cussed and delivered by men still in service, by men pensioned off, by men long departed on their final run. There are stories in the passes, and more are being made every day.

One of these, the Cajon Pass, is known as "The Big Hill of Southern California," and is the gateway for the Atchison, Topeka & Santa Fe Railroad, and by trackage rights for the Union Pacific Railroad. From the Mojave (*Mo-hah'-vay*) Desert, Cajon Pass provides a pathway down through the mountains to San Bernadino, 50 miles south and 2000 feet lower, in the heart of the Orange Empire. Sixty miles farther west is Los Angeles.

San Bernardino, situated at the far eastern edge of the relatively level Southern California plain, is a natural junction and classification point. A passenger on an eastbound train is much more impressed with the ruggedness of Cajon Pass than if he approached it on a westbound train. All traffic converges on San Bernardino. Freights are classified, helpers are cut in, and tenders are filled. From the very moment the train leaves the yard throat, crossing over to left-hand main under the 5th Street tower, perched precariously on a signal gantry, it is evident from the deep-throated exhausts that the engines are digging in for a climb.

To Devore, the tracks lie straight on a consistent two per cent grade, with high, chaparral-covered mountains gradually narrowing in on both sides. To the east can be seen the famous Arrowhead, a huge outline of an Indian arrowhead hundreds of feet high, made visible by a difference in color of vegetation. Then, crossing Cajon Creek, the rails enter a canyon, the pass proper, and run along the west wall seldom more than 25 feet above the stream bed. At Keenbrook it is evident from the number and location of tanks and standpipes that freights regularly take water here.

The canyon narrows at Blue Cut to a virtual gorge, forcing another crossing of the stream, but at Cajon station the railroad is once more west of the creek. Now we understand why the double track from San Bernardino is operated left handed, contrary to usual Santa Fe practice. When the pass was double tracked in 1913, an easier eastbound climb was secured by building a completely new line to the west of the original 3.4 per cent grade between Cajon and Summit. The new line is two miles longer than the first, but it maintains 2.2 per cent as the maximum upgrade anywhere on the pass, although the heavier gradient is still used as the downbound track. The new line includes the only two tunnels on the Los Angeles Division, both approximately 500 feet in length.

Between Cajon and Summit the two main tracks on the eastward run are so widely separated at some points that they are out of sight of each other, only coming together again just west of Summit, at an elevation of 3823 feet above sea level. Here the grade has been leveled, providing a long siding where helper engines are cut out, brakes tested, and retain-

Eastbound main just past Cajon.

Wheel Clicks collection: H. M. Eichstaedt, 202 Monroe Pl., Monrovia, Calif.

ers turned up, preparatory to the long trip down the east side of the mountains.

From Summit to Victorville the line is much less rugged than on the west side, but is of the same general pattern, following a small canyon out of the hills and then down the even-sloping desert plain to the Upper Narrows of the Mojave River. The tracks are crossed back to right hand operation by an overhead structure a few miles west of the small desert town of Victorville, which is the site of a huge cement works. This plant operates the standard gauge Mojave Northern Railroad to tap its quarries, some 11 miles from the mill.

EARLY travel over the uncharted wastelands concentrated through the routes of easiest entrance so that long before a railroad was even dreamed of, Cajon Pass was an important gateway. In 1831 Will'am Wolfskill, while on a trip from Santa Fe to Los Angeles, discovered this notch in an otherwise almost impassable range. It later formed a part of the Smith Trail, over which the company of Mormons from Utah traveled to found the city of San Bernardino in 1851.

By 1876 the Southern Pacific had succeeded in pushing its line through the Tehachapi Mountains from Bakersfield to Mojave, Barstow, and Needles, on the Colorado River. There it connected with the Atlantic & Pacific Railroad, just built out from the East. In 1884 the Atlantic & Pacific was taken over by the Santa Fe Pacific Railroad, and the SP's Barstow-Needles line was leased. In the meantime the Southern California Railroad, which had built a line from San Bernardino to San Diego, and various branches, began work on Cajon and opened it in 1886 with a line from San Bernardino to Barstow. Through service from the East into Los Angeles was possible in 1887 with completion of a connection via Pasadena. The Southern California operated Cajon Pass until 1897, at which time the Santa Fe Pacific bought it. In 1902, all of these owned and leased lines, plus the Mojave-Barstow section of the SP, were purchased

and merged with the Atchison, Topeka & Santa Fe System. The Santa Fe Pacific still exists as a corporate entity, for it sold to the AT&SF only its equipment and trackage, retaining all of the unsold land grants originally given to the Atlantic & Pacific in Arizona and New Mexico.

At the present time, the line from Needles to Barstow, as well as the stretch from Barstow to Mojave, is part of the Arizona Division of the Santa Fe. All Santa Fe mileage south of Barstow comprises the Los Angeles Division, with headquarters at San Bernardino, where extensive shop and terminal facilities are available. This division is split into four districts, the first taking in Cajon Pass on the 80-mile line from Barstow to San Bernardino, the second being the route from San Bernardino to Los Angeles via Pasadena, the third via Fullerton, and the fourth the San Diego line below Fullerton.

The Union Pacific, which now operates the Los Angeles & Salt Lake Railroad, uses Santa Fe trackage, on a rental basis, from Daggett, eight miles east of Barstow, to Riverside, nine miles south of San Bernardino. This arrangement has been in effect since the LA&SL was completed in 1905, the present contract to expire in the year 2015. Under it the Union Pacific pays a proportionate part of the cost of management, dispatching, and maintenance as determined by the relative car mileage of the two roads. At San Bernardino the UP uses Santa Fe facilities for service and storage of its helper engines, and the San Bernardino and Barstow passenger stations are operated and used jointly.

All trains, including the Union Pacific between Daggett and Riverside, are under the control of the Santa Fe dispatcher in San Bernardino. UP first class trains are shown in the Santa Fe timecard, numbered by putting their own numbers in the "200" series; for example, the *Challenger*, No. 818, becomes No. 218; No. 8 becomes No. 208. Ten first class trains are carded as daily for each direction, with the UP's streamliners and Santa Fe's *Super Chief* and *El Capitan* swelling the total on the days they run. All freights are run as extras.

Passenger train running time from San Bernardino to Summit ranges from 55 to 79 minutes for the 25 miles, about 10 minutes less being allowed for the westbound trip down the hill. Freights are purposely unscheduled, for tonnage and traffic conditions alter their time greatly. The best time up the eastbound grade, including a stop for water, is about 2 hours 20 minutes. The downgrade trip is nearly as slow, for retainers are used all the way, and 10-minute stops are made at both Cajon and Devore to permit the heat in the

Prize winner.

The Railroad Boosters, livewire fan club of Los Angeles, voted this picture a "best of the month." It was taken from the observation platform of the *Grand Canyon Limited*, at 50 miles per hour, while passing a Union Pacific freight train. The locale is in Cajon Pass just east of Summit. Building a railroad line over the tortuous mountain pass to handle ever-increasing freight loads and long streamliners resulted in many departures from normal railroading. Seemingly reverse procedure on east-west train load limits, left-hand main line operation, and main line separation so that passing trains are cut off from each other's view are some departures found when traveling over Cajon Pass. All these, plus the sight of powerful locomotives making their daily crusades, add to the pleasure of the traveler who seeks the unusual.

wheels to equalize. Passenger trains do not make such stops, but it is not unusual to see them arrive in San Bernardino in a cloud of pungent brakeshoe smoke.

The entire line is protected by searchlight-type block signals, with an interesting permissive double yellow system up the grade from San Bernardino to Summit. This permits trains actually to close in on each other without having to stop at what would ordinarily be red boards. However, such a system is not used on the east side of the Pass, for here the grade does not exceed 1.6 per cent, and operating speeds are higher, both up hill and down.

Freight trains of both roads are ordinarily held to 70 cars eastbound, and to 50 loads westbound, counting two empties as one load, while passenger trains must not exceed 17 cars. Within these limits total tonnage can vary considerably. Standard Santa Fe freight power is its 3800-3900 series of 2-10-2's. Eastbound, each drag has at least two of these, frequently three, occasionally four. Westbound tonnage drags require one helper out of Victorville. In the power shortage caused by the recent increase in traffic it is not unusual to see smaller 2-10-2's, Mikados and other types in helper service. The Union Pacific ordinarily uses 2-10-2's of its 5500 or 5000 series, with a number of 2700 Mikes as helpers.

Standard passenger power on the Santa Fe is the 3700 series of 4-8-2's and the 3751 series 4-8-4's, while the UP uses 7000 or 7800 Mountain types. Helpers are assigned according to the need, and everything is used from 1400 series Atlantics on the Santa Fe to the UP's 3500 series 2-8-8-0 Mallets. Three of the UP's 4-6-6-4 *Challenger* types are equipped as oil burners for the Los Angeles-Salt Lake run, usually hauling their namesake. Very few passenger trains require helpers westbound.

Even the arrogant Diesels of the streamliners bow to Cajon Pass, and shamefacedly break their smooth streamlining to unsheath a hidden coupler so that a steam helper can pull them over the hill on schedule.

Due to the tunnels on the eastbound main below Summit, the practice is to double head only passenger trains. Helpers on freight are ordinarily cut in ahead of the caboose, or if there is more than one helper, the first is about two-thirds of the way back in the train. Westbound helpers from Victorville are invariably ahead of the road engine.

Cajon Pass is not an easy piece of railroad, but it would be a great deal more difficult if it had the snow conditions that hamper many mountain operations in the Winter time. The greatest problem is to prevent the normally trickling little creeks from completely tearing out the railroad when they are swollen with sudden rains. During the rainy season section crews are on nearly continuous duty. The pass was effectively blocked for several days by the titanic 1937 flood, but extensive line relocations and channel protection since undertaken will probably prevent the recurrence of any such disaster. Most of the accidents on Cajon have been derailments caused by sudden slides off the hillsides.

Station structures along the line are of unusual interest. The expectation was that the region would build up in the same manner as the area south of San Bernardino. Devore was equipped with an imposing stone edifice that today seems extremely elaborate for

High, dry and wide.

Looking toward the northwest, just before reaching Cajon station on the eastbound run over the Cajon Pass. This shows a section of the Atchison, Topeka & Santa Fe Railway, where the main line is four tracked. Sparse sagebrush vegetation and yellow parched soil cover the distant hills and valleys as far as the eye can see. Leaving Cajon the eastbound tracks turn sharply to the left to take a more circuitous but less steep route on the long climb to Summit station, which is 3823 feet above sea level.

Ed Hoffeld, 2332 Mansfield Ave., Los Angeles, Calif.

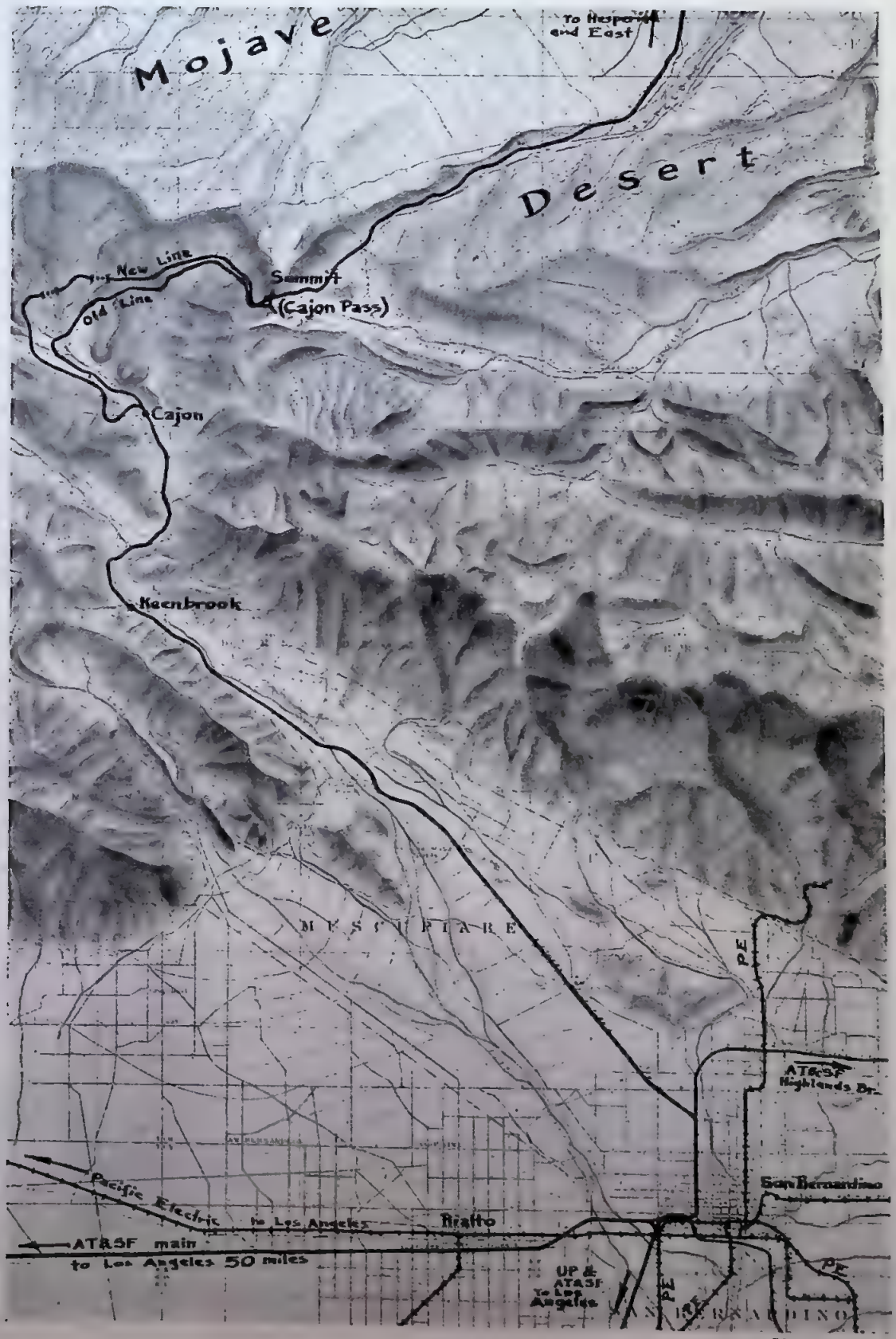
Winding upward.

Santa Fe No. X-1674 eastbound through the pass. This freight is being pulled by road engine 1674 and pushed by helper engines 1621 and 3137, the latter being just ahead of the caboose. At Summit the helpers will be cut out of the train unless ordered to go on to assist a westbound train at a point farther along the line. Photo below shows the station at Summit, with Perspiration Hill in the background. Notice old funeral car, *Descanso*, sitting to the rear and left of the station.

Wheel Clicks collection.

Until a few years ago an old dining car (below) was the station at Summit. As the sun sinks slowly in the West, mountains become boldly outlined while the rigid arms of the semaphore stand out sharp and clear.

Wheel Clicks collection.



Linn H. Westcott.

Wheel Clicks collection.

Notch in mountains.

Cajon Pass is not just a narrow canyon through a mountain range, but a broad saddle with a rough, wild bottom across which the railroad winds, gaining elevation in the hard climb to the low spot in the divide. Smoke in background betrays a pusher at the rear of this long freight.

housing only a phone booth. Cajon station is also one of the original Southern California Railroad stations, and evidently was an indistinguished structure even when it was built way back in 1886. Hesperia has an extremely large depot, for at one time this was a budding health resort town with some 3500 inhaitants. Since then it has joined the ranks of the ghost towns, with only a one-gas-pump, wooden canopied general mercantile store remaining in active trade.

The original station at Summit burned to the ground about five years ago, starting a forest fire that swept far back into the mountains. Until April, 1940, a weatherbeaten old coach spotted on the spur track served as the depot, rocking in the wind and leaking dust at every joint. At that time, a second-hand little station was brought up in two pieces via flat car from elsewhere on the division. Well adapted to the business at Summit, this quaint structure has a telegraph office many times the size of its 2 x 4 waiting room. Over the Summit operator's desk (the only 24-hour telegraph office between Victorville and San Bernardino) go many of the orders and clearance cards that keep the trains rolling over the hill. The movements recorded on the Summit train sheet sometimes total as many as 150 by the end of the day.

H. Eichstaedt.

A place to watch trains.

North from San Bernardino (left) runs the Santa Fe, working its way into the hills with the constant crescendo of locomotive exhaust that is a busy mountain railroad. At Cajon station the eastbound track diverges from its mate (right). Anywhere big power can be seen on such trains as the *Grand Canyon Limited* (at far right).

Wheel Clicks collection.

At the ends of the pass.
From far up in the San Bernardino Mountains above Keenbrook one can look down into the beginnings of Cajon Pass (left) and on southeast toward San Bernardino. The railroad is, at this point, cradled far down in the bottom of the canyon, but it's not long before it has climbed and wound across the range (background, right) and is running down the gradual eastern slope into the Mojave Desert past ex-resort town Hesperia with its abandoned hotel, that dreary, empty-windowed building in the background.

Summit residents are the section gang, three operators, and the postmistress. She comes in each day from her ranch in Little Horsethief Canyon to preside over the quaint little post office serving a rural route into the back country.

Travelers passing through Summit (virtually every one passes through, very few stop over) no doubt cast a startled eye on the spectacle of a street car, apparently in running order, perched on the hillside behind the station. It looks as out of place as a bus enthusiast on a railfan excursion. Those who know, however, recognize it as the old *Descanso*, a funeral car of the Los Angeles Railway, now the property (by donation) of Railroad Boosters, the fan organization of Los Angeles. Direct operation of the *Descanso* is in the hands of the Railroad Boosters' Summit Sunny Sunday Outing Club.

Overnight guests at the *Descanso* can spend an evening in the little depot, listening to the clicking of the relay sounders and the never-ending stories of the boomer operator, while coffee boils away in a huge can atop a glowing pot-belly stove. Throughout the night the air is filled with the sounds of the railroad. A freight may be chuffing back and forth as the helpers drop out, the noise of the slack rolling up from the distance like thunder. Always, far down the pass, on one side or both, can be heard the steady drum-like throb of engines, keeping up the eternal struggle between railroad and mountain. Their whistles precede them, arriving in a welter of echoes that seem to call to the ghosts of hoggers long dead and engines almost forgotten. Inside the operator is on the phone. "Summit, O. S. No. 206 in at 1:37 a. m., out at 1:39; No. 8 in at 2:05, out at 2:10. Copy 4, O. K. . . ."

H. Eichstaedt.

J. L. Watson

R. V. Nixon, Livingston, Mont.

Highest trestle on the Northern Pacific.

Two hundred twenty-eight feet above stream bed is the *North Coast Limited* as it crosses Marent Trestle, highest on the Northern Pacific system and located 17 miles west of Missoula, Mont. It was midafternoon when the train left Missoula, the bright western sun marking out the beach lines cut by an ancient lake in the high bluffs to the east of the city. For seven miles the limited cruised easily northwest up the broad Clark Fork Valley, but once through De Smet [where the line to Wallace diverges; see page 7, February TRAINS] it turned northward to cross a severe summit into the Jocko Valley. The pass is an old Indian trail, cutting through a narrow opening called Coriacan Defile after Chief Coriacan of the Flathead tribe. It is this same defile which the train crosses a few miles later at Evaro on this highest of NP trestles. The road engine in the photo is No. 2606, a Class A 4-8-4 built by American in 1926, and the lead engine is a helper, Mikado No. 1808, Class W-3 (Brooks, 1917).

Courtesy Canadian Pacific Staff Bulletin.

Toughest track, largest yard — Canadian Pacific Railway.

Canadian Pacific history books tell of the almost insurmountable obstacles met in building the line along the north shore of Lake Superior, and this picture of the bridge at Red Sucker Cove, near Coldwell, Ont., on the Algoma district, is an example of the fine engineering which eventually opened the difficult route in the eighties. This relic of early construction days has long since been replaced with a fill of rock and gravel. If for some reason or other a trainload of 4740 cars came steaming into the Winnipeg Terminals (below) and decided to put up there for the night there would be plenty of accommodation for each car. This figure represents the approximate capacity of the CPR's principal rail yards at Winnipeg—the largest in the world. Main line is to the left of the ladder track.

Courtesy Canadian Pacific Staff Bulletin.

Letters

★ Interesting sidelights on railroads as readers observe them.

Narrow Gauge to Santa Fe.

FOREST CROSSEN did himself proud on the old narrow gauge railroad to Santa Fe [September TRAINS]. It brought back fond memories, for I, too, have been there.

Just one thing that should have been blue-penciled is the way that brakeman Red strung the author about an engineer having to be so especially qualified to let a train down from Barranca to Embudo. (Embudo means funnel, and that is what the old crater looks like.) Of course a plainsman couldn't do it, but any of the D&RGW narrow gauge boys could any time without special training. The descent doesn't hold a candle to Cumbres Pass, or even Marshall Pass, or Lizzard Head or Leopard Creek passes on the Rio Grande Southern.

My greatest mountain thrill was over Boreas Pass on the old South Park. It really was a grade—4.4 per cent on the Como side and 4.2 per cent on the Breckenridge side.

Lucius Beebe's "Varnish Vignettes" in the July issue were good. Reading them caused me to close my eyes and visualize a few of mine, not all varnish by any means, although I never traveled without proper permission:

A ride in an engine cab on the longest railroad in the world, Trans-Siberian (five-foot gauge). . . . Storming up the grade between Kelso and Cima on the old Salt Lake (now UP) with my old friend, Engineer Louie Hart, now deceased. . . . Riding along the beautiful Hamakua Coast on Hawaii's efficient standard gauge road on the cliff's edge a thousand feet above the sea. . . . The diminutive though efficient three-foot gauge railroad on the island of Oaku, and Halivieroa, its beauty spot.

My wildest, most glamorous and most primitive narrow gauge ride, from end to end of the old Carson & Colorado. . . . Moonlight in beautiful Amargosa Canyon on the old Tonopah & Tidewater (Death Valley Line). . . . The magnificent scenery on the Moffat Road. . . . Riding a little narrow gauge caboose from Denver to Idaho Springs and Black Hawk on the old Colorado Central. . . . Pike's Peak via cog railway ahead of a little Vauclain compound.

Riding down Ute Pass over what is left of the Colorado Midland. . . . From top to bottom of Royal Gorge in a "bird cage." . . . Over Marshall Pass and down Black Canyon of the Gunnison before the *Shavano* passenger service was abandoned. . . . From end to end of the old Rio Grande Southern in a galloping goose. . . . A breath-taking glance to the bottom of Toltec Gorge from the observation platform of the queen of narrow gauge passenger trains, running between Durango and Alamosa via Cumbres Pass. . . . Twisting around hairpin turns on the old Pea Vine (Santa Fe, Prescott & Phoenix).

Crawling along the edge of Carrizo Gorge on the San Diego & Arizona Eastern. . . . A dusty ride on the Inter-California of Mexico before regular service was inaugurated. . . . The comfort and splendor of the Burlington *Zephyr* from Chicago to Denver. . . . A magnificent view of Mount Shasta from Southern Pacific coach windows. . . . The splendid dining service on the Illinois Central between Chicago and New Orleans. . . . The Great Plains from the windows of the yellow cars of the Milwaukee Road.

Jess Frazier.

3442 E. 3rd St., Los Angeles, Calif.

An Impressive Sight, Unseen.

WHAT is the most impressive sight in American railroading? I'll put in my vote for the long trains of ore cars descending the hills on the Duluth, Missabe & Iron Range Railroad. Today pictures are scarce on the Iron Range; bridges are guarded at both ends and no permission is given whatsoever. Reason? Huge quantities of steel are exchanged at Duluth to the ore boats and taken to Cleveland and other points on the Eastern lakes—definitely an essential commodity for the present-day program.

The Duluth, Missabe & Iron Range is a composite of the Duluth & Iron Range and of the Duluth, Missabe & Northern. Besides iron ore, it handles lumber from logging roads in the vicinity.

E. J. Easton.

Toledo, O.

Improvements on Cog Road.

SINCE your article on the Mount Washington Cog Railway appeared in the June issue, I have noticed that a turnout has recently been incorporated, thus eliminating one of the train changes. The turnout was developed by the engineering department of the Boston & Maine. The cog road may install additional turnouts so that passengers will go straight to the top without any changes.

Edward Sanderson.

Littleton, Mass.

Sound Effects Records.

TO GO with railroad movies what's more appropriate than railroad sound effects? Charles Michelson, 67 West 44th Street, New York City, supplies sound effects records to the radio trade and has made train sound effects records available to railfans at half the trade price, or $1 each. Four different records are available, including both Diesel and steam trains starting, stopping, whistling, ringing bells, running past at speed, or with crossing bells, wheel clicks, and station noises.

New Railroad Books

RAILROADIANS OF AMERICA, BOOK NO. 3, Motive Power on the Delaware & Hudson. 128 pages, 8" x 11". Published by Railroadians of America, Walter A. Lucas, Editor, 56 Tuxedo Ave., Hawthorne, N. J.

PROBABLY the most unusual steam locomotives in the country are those of the Delaware & Hudson. Old Mother Hubbard locomotives have been rebuilt into graceful, trim-lined beauties. Experimental locomotives have been put on the rails to test poppet valves, high pressure boilers, and compounding. The *Stourbridge Lion* of the D&H was the first steam locomotive to operate in America, way back in 1829. Here is the basis of a good story, and with all luscious detail and photos thrown in, the Railroadians present it as their third book. Perhaps most interesting to the average locomotive lover is the series of "before and after rebuilding" photos.

Included is a test report and discussion on the experimental *Horatio Allen* locomotive which answers the many questions as to what this unusual 2-8-0 is doing. A dynamometer car test tape illustrates this material.

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The Month

★ New streamliner creates business where none existed before.

★ Most significant new train is the *Delta Eagle* of the Missouri Pacific, running south from Memphis along the west bank of the Mississippi to Talullah, La. Most of the route was not previously served by any passenger train, but the three-car streamliner has attracted enough business to the rails to make money. Except for the Memphis terminal, all cities served are very small. This special case would seem to show that on lines where even mixed trains have been given up as unprofitable, modern service may bring travel back to the rails.

★ The Interstate Commerce Commission asserted its freedom from politics and, ignoring the Senate investigating committee's recommendation [TRAINS, July, 1941, page 50], refused to further postpone abandonment of the D&RGW's narrow gauge road between Antonito, Colo., and Santa Fe, N. Mex. Last train over the Chili line [September, 1941, TRAINS, page 5] ran September 1, and the next day crews starting converting the track into 15,000 tons of scrap for Defense.

★ Hunger amidst plenty is the case of the Chicago, Aurora & Elgin, electrified road running from Chicago to western suburbs. The line is so short of equipment that it has just ordered 10 new motor units on a lease-purchase plan, and yet it is in receivership and recently raised its fares in an attempt to make ends meet. One reason is that the traffic is principally rush hour and short haul. Ten trains leave Wells Street terminal, Chicago, during the one hour between 4:30 and 5:30 p. m., but most of the equipment needed for this heavy peak is only used twice daily in rush hours. Secondhand cars have been purchased from WB&A and others leased from North Shore Line to meet the situation.

★ The D&RGW is planning to convert to standard gauge the 25 miles of three-foot track between Montrose and Ridgway. This is the beginning of the end of narrow gauge in the western part of Colorado, as the Rio Grande Southern narrow gauge connects at Ridgway and the latter road will find it much harder to feed a standard gauge road than to interchange with one of the same gauge. Trucks will replace the 10 miles of D&RGW narrow gauge from Ridgway to Ouray which would be difficult of conversion.

★ Recent order for 15 four-unit freight Diesels for the Santa Fe, which already has five of the 5400-horsepower machines, may be hailed as the end of the steam locomotive, but it looks to us as if the Santa Fe happens to have operating conditions—*i. e.*, long runs, bad water, and oil fuel—which especially favor Diesel operation. Diesel power has no doubt arrived in freight use just as for switching and passenger service, but it has no more a monopoly of good qualities than has steam or straight electric power. Each railroad has its own situation to meet, and in some Diesel can do better, regardless of sentiment for the more colorful steam power, while in still other cases steam can continue to do the best job. What the Santa Fe's order really means is that Diesel motive power is fully past the experimental stage and new locomotive orders will be on the basis of comparative performance of tried and proved types of power.

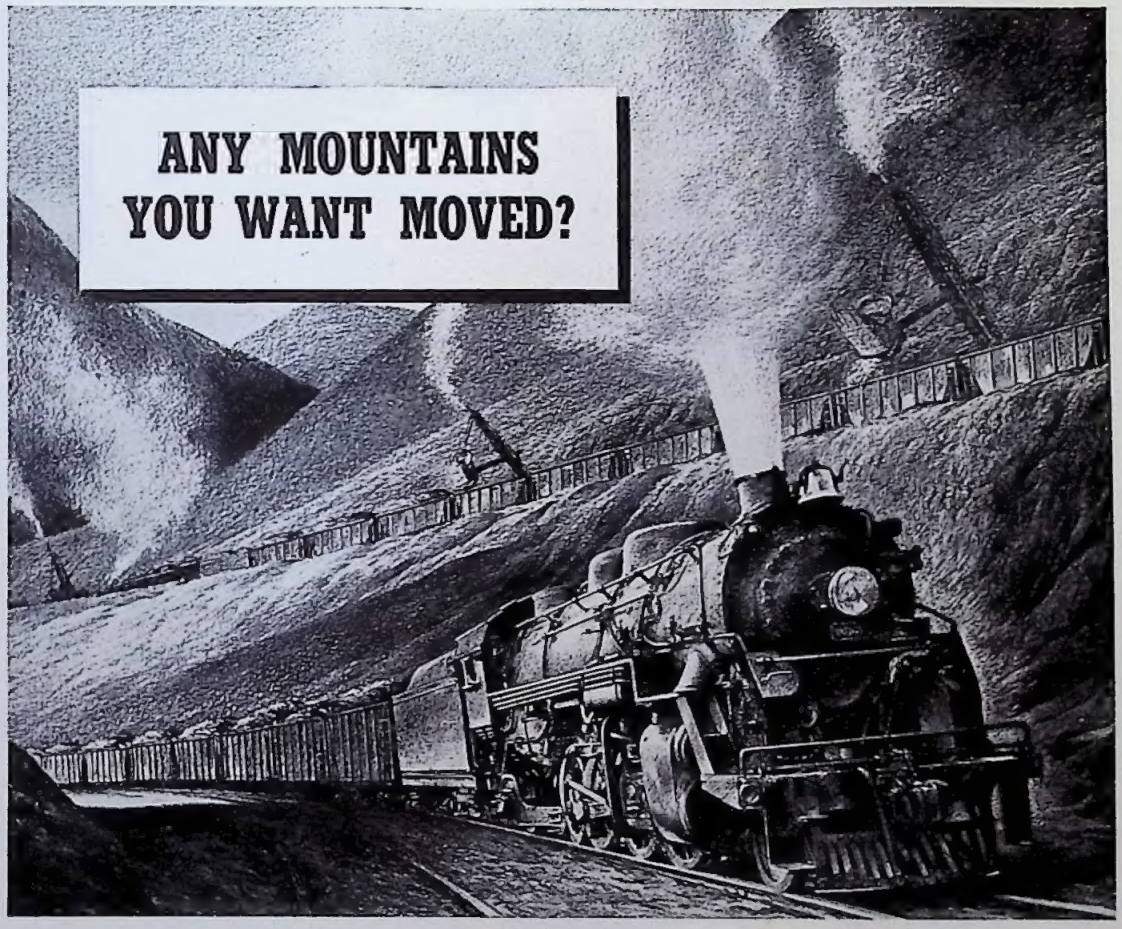
★ A Los Angeles ordinance makes it a misdemeanor to loiter around railroad stations, thus cutting in on the railfan's inalienable right of watching trains.

★ Heavy wartime traffic is hastening changes in railroad service which might otherwise come much later but no less inevitably. Need for troop train coaches has forced a paring of mixed and branch line train service that is not definitely paying its way, and need for freight cars has hastened the Illinois Central in extending a system of truck l. c. l. dispatch inaugurated two years ago in Carbondale, Ill. The system of distributing merchandise by truck from central unloading points in each area is much like that of the Dominion Atlantic [TRAINS, May, 1941, page 50]. The time may be coming when railroads will freely offer transportation by whatever method is most economical: all-rail, all-truck for short l. c. l. hauls, or rail and truck.

★ Railroad stationery is a drab spot in an otherwise colorful business. The Santa Fe has changed this with a bright, fresh, two-color letterhead.

★ Nearly 10 years ago the first Burlington *Zephyr* and the first Union Pacific *Streamliner* led off the parade of new type trains. But they were short, light, low-cost units, designed to pep up business on relatively light traffic runs, a far cry from the multi-car streamliners of today. The original objective had possibilities, but was seemingly lost in the rush to get increased business over heavily traveled routes. The *Delta Eagle* (see above) is a throwback to the original objective. Another is the *Prospector*, so-called pocket streamliner of the D&RGW. The two-car units provide overnight service between Denver and Salt Lake City, with both coach and sleeping accommodations. Practically a 570-mile interurban line!

★ Mourn the passing of the original all-coach luxury train. The Jersey Central's justly famous *Blue Comet* makes its last round trip between Jersey City and Atlantic City on September 27. In 1929 the *Blue Comet* was an innovation, the talk of travelers, the only coach train with reserved seats, car porters, club car facilities. But now it has lost out not only to highways, but to the Pennsylvania-Reading Seashore [see August TRAINS] competition. And so goes the last Jersey Central train over a geographically handicapped route.



IF it's a penny postcard you want to send to a friend in the next town, the railroad carries it.

If it's a mountain you want moved, the railroad moves it.

And for the past year, the railroads have had mountain piled on mountain and still have kept them all moving.

First, the defense program doubled and redoubled far beyond the government's own estimates.

Consumer buying, rising to a ten-year peak, meant a marked increase in traffic.

The demand for ships brought a vast shift of tonnage from water to rail.

The strike dislocated the movement of the vital coal traffic; thousands of coal cars stood idle for weeks and then had to do double duty to catch up.

All these the railroads are moving — without congestion or tie-ups.

Then, on top of it all, came a bumper crop of grain—and all of this for which storage can be found, the railroads are moving.

And the railroads are preparing to move still greater mountains. In the past two years they have put in service nearly 200,000 new and rebuilt cars. The schedule calls for 120,000 more in 1942—150,000 more in 1943, if the materials it takes to build them can be obtained.

Railroad transportation is one problem this country hasn't needed to worry about in the present emergency. The railroads have been able to handle the job so well for two reasons —one is that they entered the emergency period at the highest state of efficiency in railroad history. The other is that they have had the cooperation of government departments and shippers in making the most effective use of all available equipment.

BIG TRAVEL BARGAIN—$90 coach fare, $135 Pullman ($45 extra for one or two passengers in a lower berth) for Grand Circle Tours of U. S. Ask your local ticket agent.

ASSOCIATION OF AMERICAN RAILROADS WASHINGTON, D. C.

Trains

Milwaukee Road, Elm Grove, Wis.; Dusk. Linn H. Westcott.